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BOTANICAL MAGAZINE,

ILLUSTRATING AND DESCRIBING

Plants of the Royal Botanic Gardens of Kew,

AND OF OTHER BOTANICAL ESTABLISHMENTS;

EDITED BY

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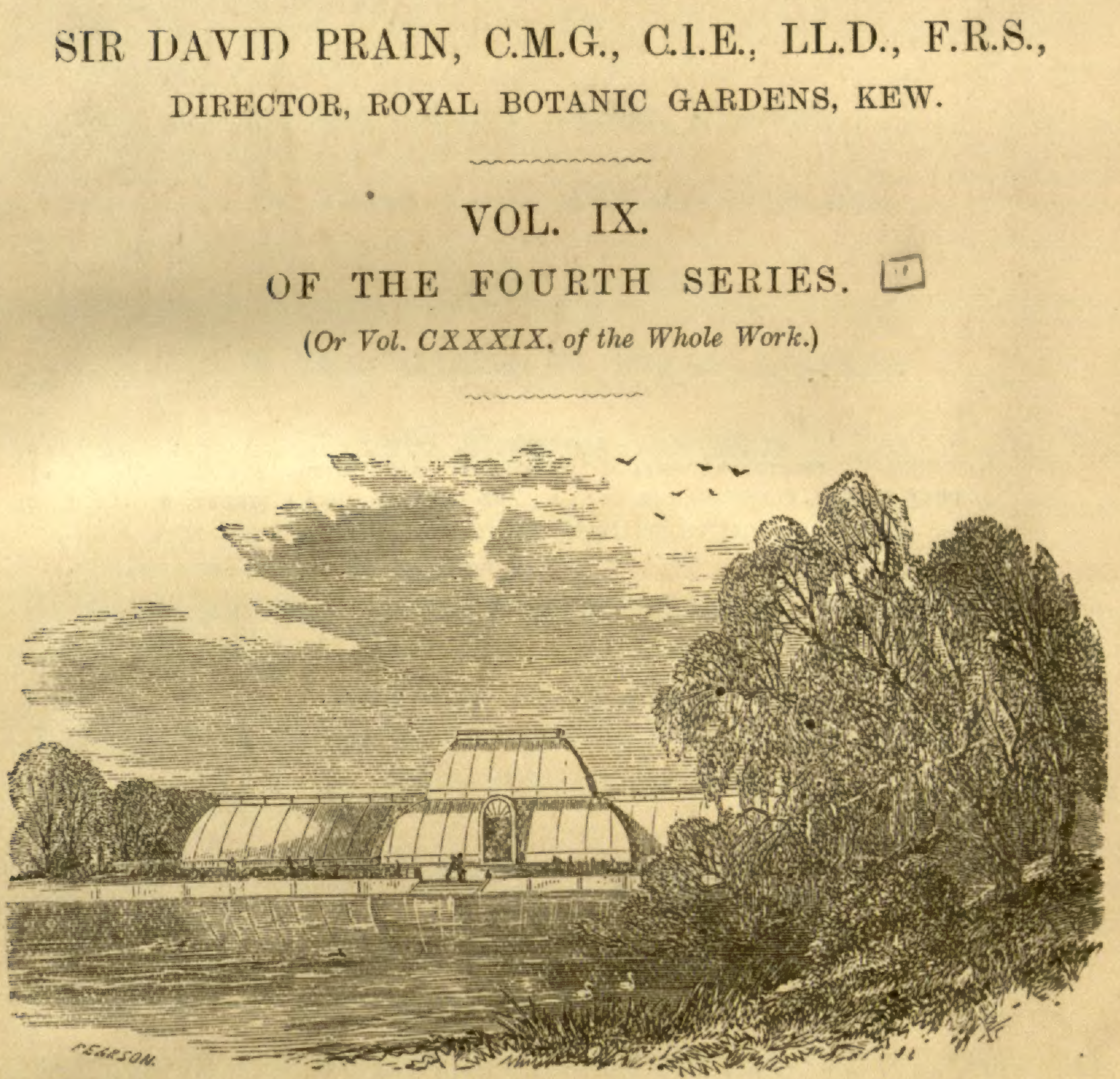

"There the most daintie Paradise on ground
Itself doth offer." SPENSER.

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To

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THIS VOLUME OF THE

BOTANICAL MAGAZINE

IS GRATEFULLY DEDICATED.

Kew, December 1, 1913.

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Tab. 8472.

SENECIO stenocephalus.

China and Japan.

Compositae. Tribe Senecionideae.

Senecio, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 446.

Senecio stenocephalus, *Maxim. in Bull. Acad. Pétersb.* vol. xvi. p. 218; *Hemsl. in Gard. Chron.* 1905, vol. xxxviii. p. 213; affinis *S. Ligularia,* Hook. f., sed bracteis angustioribus capitulis paucifloris differt.

Herba. *Folia* radicalia longe petiolata; petioli circiter 7 mm. diametro, glabri; lamina reniformis, basi sinu lato, circiter 22 cm. longa, basi 33 cm. lata, chartacea, utrinque glabra, grosse dentata, dentibus numerosis triangulari-ovatis obtuse mucronatis 5 mm. longis et latis; nervi laterales utrinque circiter 8, patuli, multiramosi, infra prominentes; folia caulina inferiora petiolo 15 cm. longo basi caulem amplectente parte superiore subterete; lamina ambitu foliis radicalibus similis, circiter 15 cm. lata; folia caulina superiora petiolo foliaceo 5 cm. longo 2·5 cm. lato caule circumdato; lamina parva. *Racemi* ad 35 cm. longi, basi 7 cm. diametro; bracteae inferiores capitula excedentes, anguste lanceolatae, ad 4·5 cm. longae et 8 mm. latae, extra glabrae, intus parce lanatae; pedunculi 1 cm. longi, parce pubescentes; bracteolae 2, subopppositae, supra medium pedunculum insertae, subulatae, 1–1·2 cm. longae, carnosae, glabrae. *Capitula* lutea, 3·5 cm. diametro. *Involucrum* anguste campanulatum, 1 cm. longum, 5 mm. diametro; bracteae circiter 6, connatae, carnosae, lineari-oblongae, obtusae, margine anguste scariosae, apicem versus puberulae. *Flores radii* 1–5, patuli, citrini; corollae tubus anguste cylindricus, basi leviter expansus, 5 mm. longus, glaber; limbus lanceolatus, apice tridentatus, 1·5–2 cm. longus, 4–5 mm. latus, 5-nervis, glaber; achaenia 4 mm. longa, glabra; pappi setae barbellatae, 5 mm. longae, purpurascentes; stylus longe exsertus, flavus. *Flores disci* 5–6; corollae tubus 1 cm. longus, inferne anguste cylindricus, supra medium subcampanulato-ampliatus, glaber; lobi lanceolati, subacuti, 1 mm. longi, glabri; antherae 4·5 mm. longae, purpurascentes; achaenia pappoque iis florum radii simillima; stylus exsertus, ramis recurvatis pubescentibus.—*S. cacaliaefolius,* Sch. Bip., var. *stenocephalus,* Franch. in Bull. Soc. Bot. Fr. vol. xxxix. p. 297. —J. Hutchinson.

The *Senecio* here figured is a native of Japan and of Northern China, and is a member of the section *Ligularia,* whose forms are difficult to discriminate in the herbarium. Mr. Franchet considered our plant a form of *S. Ligularia,* Hook. f., for which he used the name *S. cacaliaefolius,* Sch.-Bip.; Mr. Maximowicz, on the other hand, accorded it separate recognition. In 1887 Mr. Hemsley, a third great authority on the Chinese flora, was inclined to adopt (Ind. Fl. Sin. vol. i. p. 455) the view of Franchet; in 1905, when

living plants were available for study, he was able to vindicate the conclusion of Maximowicz. As Mr. Hutchinson now points out, *S. stenocephalus* may be readily distinguished from *S. Ligularia* by the long and narrow bracts which subtend the peduncle and by the narrower fewer-flowered heads. The material for our figure was received from Messrs. J. Veitch and Sons, and was derived from a plant obtained in Northern China by Mr. W. Purdom. It promises to be hardy, and to be an acceptable addition to the wild garden.

DESCRIPTION.—*Herb.* *Leaves*: radical long-petioled, petioles about $\frac{1}{4}$ in. wide, glabrous; lamina reniform, with a wide basal sinus, about 9 in. long, 16 in. across, chartaceous, glabrous, margin coarsely toothed, teeth triangular-ovate, bluntly mucronate, $\frac{1}{5}$ in. long and wide; lateral nerves about 8 on each side, spreading, much-branched, raised beneath; cauline low down with petiole 6 in. long, stem-clasping at base, above almost terete, and with lamina as in the radical leaves; higher up with a leafy petiole 2 in. long, 1 in. across and with a small lamina. *Racemes* up to 14 in. long, $2\frac{3}{4}$ in. wide at the base, lower bracts longer than heads, narrow-lanceolate, up to $1\frac{3}{4}$ in. long, $\frac{1}{3}$ in. wide, glabrous without, sparingly woolly within; peduncles $\frac{2}{5}$ in. long, sparingly pubescent, bracteoles 2, subopposite, attached beyond middle of peduncle, subulate, $\frac{2}{5}$–$\frac{1}{2}$ in. long, fleshy, glabrous. *Heads* yellow, $1\frac{1}{3}$ in. across. *Involucre* narrow-campanulate, $\frac{2}{5}$ in. long, $\frac{1}{5}$ in. across; bracts about 6, connate, fleshy, linear-oblong, obtuse, margin narrowly scarious, puberulous towards the tip. *Ray-florets* 1–5, spreading, bright yellow; corolla-tube narrow-cylindric, slightly widened at base, $\frac{1}{5}$ in. long, glabrous; limb lanceolate, 3-toothed at tip, $\frac{1}{3}$–$\frac{3}{4}$ in. long, $\frac{1}{6}$–$\frac{1}{5}$ in. wide, 5-nerved, glabrous; fruits $\frac{1}{6}$ in. long, glabrous; pappus-setae barbellate, $\frac{1}{5}$ in. long, purplish; style far exserted, yellow. *Disk-florets* 5–6; corolla-tube $\frac{2}{5}$ in. long, narrow-cylindric below, widened and subcampanulate above the middle, glabrous; lobes lanceolate, subacute, very short, glabrous; anthers about $\frac{1}{6}$ in. long, purplish; fruits and pappus-setae as in ray-florets; style exserted, its arms recurved, pubescent.

Fig. 1, ray-floret; 2, disk-floret; 3, pappus-seta; 4, anthers; 5, style-arms of disk-floret:—*all enlarged.*

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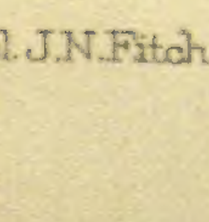

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Tab. 8473.

ROSA sertata.

China.

Rosaceae. Tribe Roseae.

Rosa, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 625.

Rosa (§ Cinnamomeae) **sertata**, *Rolfe*; species ex affinitate *R. Webbianae*, Wall., a qua habitu laxiori, aculeis tenuioribus, foliis longioribus et fructu angustiori differt.

Frutex ramosus, 1–1·5 m. altus; ramuli glauci, aculeis geminatis rectis gracilibus circiter 1 cm. longis armati, vel rarius inermes. *Folia* conferta, 4–10 cm. longa, 7–11-foliolata; rhachis sparse glanduloso-setulosa et aculeolata; foliola subsessilia, elliptica vel elliptico-oblonga, obtusa, acute dentata, subtus glauca, 1–2 cm. longa; stipulae adnatae, anguste oblongae, acutae vel subobtusae, ciliato-glandulosae, 8–10 mm. longae. *Flores* speciosi, rosei vel roseo-purpurei, 5–6 cm. diametro, in ramulorum brevium apicibus pauci vel solitarii; pedunculi 1·5–3 cm. longi, glanduloso-setulosi vel laeves. *Receptaculum* anguste ovoideum, glanduloso-setulosum vel laeve, 5–10 mm. longum. *Calycis* lobi ovato-lanceolati, caudato-acuminati, interdum foliacei, puberuli, glanduloso-setulosi vel laevi, 1–2 cm. longi, subpatentes. *Petala* late obcordata. *Filamenta* glabra, 3–5 mm. longa, antheris aureis. *Fructus* ovoideus, apice attenuatus, saturate ruber, circiter 2 cm. longus, sepalis persistentibus. *Achaenium* basi et dorso villosum, 3 mm. longum; styli villosi in columnam 4 mm. longam cohaerentes.—*R. Webbiana*, Vilmorin in Fruticet. Vilmorin. p. 93; nec Wall.—R. A. Rolfe.

The handsome Rose here figured is one grown from Chinese seeds obtained by Mr. E. H. Wilson on behalf of Messrs. J. Veitch and Sons, which flowered in the Kew collection in June 1910. The flowers show that it is identical with another plant collected by Mr. A. Henry, which the late Professor Crepin thought might be a small-leaved form of *R. macrophylla*, Lindl., and with two other Chinese plants presented by Messrs. Vilmorin, Andrieux, as *R. Webbiana*, Wall. Neither of the suggestions hitherto offered is, however, wholly satisfactory. From *R. macrophylla* the species here described as *R. sertata* differs in its much smaller rounded leaflets and in numerous other details; from *R. Webbiana* it is easily distinguished by its laxer habit, its few slender straight stipulary thorns, and its more slender, beaked fruit. It is more nearly allied to *R. Willmottiae*, Hemsl., a plant figured at t. 8186 of this work,

than it is to *R. Webbiana*, but *R. Willmottiae* is a much smaller plant in all its parts than the subject of our plate. In gardens *R. sertata* will be valued for its graceful habit; it makes long slender shoots which in the following season become gracefully arched and bear in mid-June a profusion of its beautiful flowers followed by richly coloured fruits, while it has the finely cut, daintily formed leaves and the glaucous stems that have rendered its allies *R. Webbiana* and *R. Willmottiae* such favourites among wild roses. It has so far succeeded well in stiff loam and gives promise of being a more vigorous shrub in gardens than *R. Webbiana*. So far the only experience of its propagation has been from seed, but it is probable that, like *R. Webbiana*, it may be increased by layers and perhaps by autumn cuttings.

DESCRIPTION.—*Shrub*, branched, 3–5 ft. high; twigs glaucous, armed with straight, slender, geminate prickles over $\frac{1}{3}$ in. long, rarely unarmed. *Leaves* clustered, $1\frac{3}{4}$–4 in. long, 7–11-foliolate, rachis sparingly glandular-setulose and prickly; leaflets subsessile, elliptic or elliptic-oblong, obtuse, sharply toothed, glaucous beneath, $\frac{1}{3}$–$\frac{3}{4}$ in. long, stipules adnate, narrow-oblong, acute or somewhat blunt, ciliate-glandular, $\frac{1}{3}$ in. long. *Flowers* showy, rose or rose-purple, 2–$2\frac{1}{4}$ in. across, few or solitary at the ends of abbreviated twigs; peduncles $\frac{2}{3}$–$1\frac{1}{4}$ in. long, glandular-setulose or smooth. *Receptacle* narrow-ovoid, glandular-setulose or smooth, $\frac{1}{5}$–$\frac{1}{3}$ in. long. *Calyx* lobes ovate-lanceolate, caudate-acuminate, sometimes leafy, puberulous, glandular-setulose or smooth, $\frac{1}{3}$–$\frac{3}{4}$ in. long, somewhat spreading. *Petals* wide-obcordate. *Filaments* glabrous, $\frac{1}{8}$–$\frac{1}{5}$ in. long; anthers golden-yellow. *Fruit* ovoid, narrowed at the top, deep red, about $\frac{3}{4}$ in. long, crowned by the persistent sepals. *Achenes* villous at the base and on the back, $\frac{1}{8}$ in. long; styles villous, cohering in a column $\frac{1}{6}$ in. long.

Figs. 1 and 2, stamens; 3, a carpel; 4, ripe fruits:—*all enlarged except* 4, *which is of natural size.*

M.S. del. J.N. Fitch lith

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Tab. 8474.

CLERODENDRON Bakeri.

Tropical Africa.

VERBENACEAE. Tribe VITICEAE.

CLERODENDRON, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 1155.

Clerodendron Bakeri, *Gürke in Engl. Bot. Jahrb.* vol. viii. p. 175; *Baker in Dyer, Fl. Trop. Africa,* vol. v. p. 296; affinis *C. Schweinfurthii,* Gürke, sed foliis superne grosse repando-dentatis calycis dentibus majoribus differt.

Frutex ad 1·3 m. altus; rami juniores pubescentes. *Folia* oblongo-elliptica vel obovato-elliptica, acute subcaudatim acuminata, basi rotundata vel leviter cuneata, 9–20 cm. longa, 5–10 cm. lata, parte superiore grosse repando-dentata, parte inferiore integra vel subintegra, tenuiter chartacea, nervis exceptis utrinque glabra, nervis infra puberulis vel interdum parce pilosis, lateralibus utrinque circiter 8 arcuatis infra prominentibus, nervis tertiariis laxe subparallelis; petioli 1·5–2·5 cm. longi, verrucosi, tomentelli. *Cymae* axillares, pedunculatae, dense multiflorae, circiter 12 cm. expansae; pedunculi 5–15 cm. longi, glabri vel parce puberuli; bracteae bracteolaeque lineari-subulatae, usque ad 3 mm. longae, puberulae. *Flores* albi. *Calycis* tubus longe campanulatus, 3 mm. longus, circiter 2 mm. diametro, glaber; dentes triangulares, subobtusi, vix 2 mm. longi, glabri. *Corollae* tubus gracilis, 3–3·5 cm. longus, extra glaber; lobi patentes, elliptici vel oblongo-elliptici, apice rotundati, 6–8 mm. longi, 4–5 mm. lati, glabri. *Filamenta* circiter 1·5 cm. exserta, erecta, demum recurva, glabra; antherae vix 2 mm. longae. *Stylus* gracillimus, ad 2 cm. exsertus, glaber. *Fructus* niger, obovoideus, 1 cm. longus, glaber, calyce accrescente carnoso albescente parte inferiore cinctus.—*C. congense,* Baker in Kew Bulletin, 1892, p. 127, non Engler.—J. HUTCHINSON.

The pleasing *Clerodendron* which forms the subject of our illustration is a native of West Tropical Africa, where it has been collected both in the region of the Lower Congo and in Sierra Leone. In the latter country it occurs, according to Mr. Scott Elliot, near rivers, and forms a handsome fragrant shrub about four feet high. The plant from which the material for our figure has been obtained is one which was presented to Kew in 1910 by Captain Munro, R.N., of Woodlands, Binfield. Grown in a tropical stove it flowered in March and ripened fruits in June 1911, and again in 1912. The nearest ally of *C. Bakeri* is *C. Schweinfurthii,* Gürke, a species collected by Dr. Schweinfurth in Niam-niamland, which is most easily distinguished by its almost entire leaves

and its smaller, more acute calyx-teeth. With care and under stove conditions *C. Bakeri* may be grown into a very decorative plant.

DESCRIPTION.—*Shrub*, 4 ft. high; young branches pubescent. *Leaves* oblong- or obovate-elliptic, sharply almost caudately acuminate, base rounded or slightly cuneate, $3\frac{1}{2}$–8 in. long, 2–4 in. wide, margin in anterior half coarsely repandly toothed, in the basal half subentire or entire, thinly chartaceous, glabrous except on the nerves on both faces, nerves puberulous or sometimes sparingly pilose beneath, lateral arching, raised beneath, about 8 on each side, connected by almost parallel veins; petiole $\frac{2}{3}$–1 in. long, verrucose, somewhat hairy. *Cymes* axillary, peduncled, densely many-flowered, about 5 in. across; peduncles 2–6 in. long, glabrous or sparingly puberulous; bracts and bracteoles linear-subulate, 1–$1\frac{1}{2}$ lin. long, puberulous. *Flowers* white. *Calyx-tube* rather deeply campanulate, $1\frac{1}{2}$ lin. long, 1 lin. wide, glabrous; teeth triangular, somewhat blunt, barely 1 lin. long, glabrous. *Corolla-tube* slender, $1\frac{1}{4}$–$1\frac{1}{3}$ in. long, glabrous outside; lobes spreading, elliptic or oblong-elliptic, rounded at the tip, $\frac{1}{4}$–$\frac{1}{3}$ in. long, $\frac{1}{6}$–$\frac{1}{5}$ in. wide, glabrous. *Filaments* long, exserted $\frac{2}{3}$ in., erect, at length recurved, glabrous; anthers barely 1 lin. long. *Style* very slender, exserted $\frac{3}{4}$ in., glabrous. *Fruit* black, obovoid, $\frac{2}{5}$ in. long, glabrous, the base surrounded by the accrescent, fleshy, whitish calyx.

Fig. 1, calyx and pistil; 2 and 3, anthers; 4, ovary; 5, fruiting cyme; 6, vertical section of fruit:—*all enlarged except* 5, *which is of natural size.*

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Tab. 8475.

AMORPHOPHALLUS corrugatus.

Siam.

Aroideae. Tribe Pythonieae.

Amorphophallus, *Blume*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 970.

Amorphophallus corrugatus, *N. E. Brown in Kew Bulletin*, 1912, p. 269; affinis *A. Kerrii*, N. E. Brown, sed ovariis atropurpureis, stylis longioribus et appendice valde corrugata facile distinguitur.

Herba tuberosa perennis. *Tuber* 4–5 cm. diametro, depresso-subglobosum. *Folium* solitarium; petiolus 45–60 cm. longus, sordide viridis, fusco-maculatus et punctatus; lamina radiato-tripartita, viridis; partitiones 25 cm. longae, irregulariter pinnatisectae et furcatae, segmenta sessilia, decurrentia, 3–15 cm. longa, 2–6 cm. lata, elliptico-ovata vel elliptico-oblonga, subcuspidato-acuminata, basi subcuneato-angustata. *Pedunculus* 25–55 cm. longus, ad 1 cm. crassus, sordide viridis et albido-variegatus et fusco-punctatus. *Spatha* erecta, 7–15 cm. longa, 3–7 cm. lata, cucullata, apice leviter fornicata, obtusa, basi brevissime convoluta, marginibus leviter undulatis, glabra, extra viridis versus basin albido-variegata, marginibus purpureo-tinctis, intra albida, apice viridis, marginibus purpureis. *Spadix* spatha multo brevior, stipitata; stipes albus; pars feminea 1·5–3 cm. longa, ad 1·8 cm. crassa, cylindrica, fusco-purpurea; ovarium globosum, in stylum 2–3 mm. longum abrupte contractum, stigmate punctiformi; pars mascula 1·5–2 cm. longa, ad 1·4 cm. crassa, cylindrica, roseo-tincta vel carnea; appendix 1·5–3 cm. longa, ad 2 cm. crassa, irregulariter ovoidea, obtusa, profunde corrugata, sordide ochracea. —N. E. Brown.

The Aroid genus *Amorphophallus* includes some seventy-five species, widely spread in tropical and subtropical forests in the Old World, of which about one-sixth have already been figured in this work. That which forms the subject of our illustration was discovered by Dr. A. F. G. Kerr in the evergreen forest on the Doi Sootep mountain, in the district of Chiengmai, Siam, at an altitude of 5000 ft. above sea-level. Herbarium material of the plant was sent by Dr. Kerr to Kew, while living tubers were forwarded by him to the Botanic Garden of Trinity College, Dublin. Here one of these tubers, grown under stove conditions, flowered in April 1912, and supplied the material from which our plate has been prepared. To the courtesy of Professor H. H. Dixon, by whom the flower had been sent, we are further indebted for the subsequent communication

of the leaf produced by the same tuber. Specifically *A. corrugatus* is readily distinguished from its nearer allies by the spathe being open in front almost to the base, by the remarkably corrugated appendix, and by the purple ovaries which are well exposed to view. The delicate shading of the rather agreeably coloured spathe and spadix render this species more ornamental than some other members of the genus.

DESCRIPTION.—*Herb*, tuberous, perennial; tuber up to 2 in. across, depressed subglobose. *Leaf* solitary, petiole $1\frac{1}{2}$–2 ft. long, dirty-green, with tawny dots and blotches; lamina radiately 3-partite, green; sections 10 in. long, irregularly pinnatisect and furcate; segments sessile, decurrent, $1\frac{1}{4}$–6 in. long, $\frac{3}{4}$–$2\frac{1}{4}$ in. wide, elliptic-ovate or elliptic-oblong, almost cuspidately acuminate, base cuneately narrowed. *Peduncle* 10–22 in. long, about 5 lin. thick, dirty-green with white blotches and tawny dots. *Spathe* erect, 3–6 in. long, $1\frac{1}{4}$–3 in. wide, hooded, the apex slightly vaulted, obtuse, the base slightly convolute, margins slightly undulate, glabrous, outside green and mottled with white towards the base, the margins slightly purplish, inside whitish, green at the tip, the margins purple. *Spadix* much shorter than the spathe, stipitate; stipe white; female portion $\frac{2}{3}$–$1\frac{1}{4}$ in. long, $\frac{3}{4}$ in. thick, cylindric, tawny-purple; ovary globose, suddenly narrowed into a style 1–$1\frac{1}{2}$ lin. long, stigma punctiform; male portion $\frac{2}{3}$–$\frac{3}{4}$ in. long, $\frac{2}{3}$ in. thick, cylindric, rose- or flesh-coloured; appendix $\frac{2}{3}$–$1\frac{1}{4}$ in. long, $\frac{3}{4}$ in. thick, irregularly ovoid, deeply corrugated, dirty ochre-yellow.

Fig. 1, group of four stamens; 2, ovary; 3, longitudinal section of ovary; 4, transverse section of ovary; 5, ovule:—*all enlarged.*

M.S. del. J.N. Fitch lith

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Tab. 8476.

ASTER Purdomii.

China.

Compositae. Tribe Asteroideae.

Aster, *Linn.*: *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 271.

Aster Purdomii, *Hutchinson*; species inter asiaticis foliis radicalibus petiolatis ovatis vel ovato-ellipticis, 2–3-denticulatis, pappi setis externis quam internis multo brevioribus valde distincta.

Herba circiter 15 cm. alta. *Caulis* monocephalus, ad basin paucifoliatus, ceterum nudus, purpureo-viridis, pilis refl xis pubescens. *Folia* radicalia pauca, petiolata, ovata vel ovato-elliptica, apice obtusa, basi rotundata vel leviter cuneata, 3–3·5 cm. longa, 2–2·5 cm. lata, chartacea, margine utrinque 2–3-denticulata, supra basin trinervia, utrinque breviter setuloso-pubescentia, nervis supra immersis subtus elevatis; caulina sessilia, oblongo-lanceolata, subacuta, ad 3 cm. longa et 2 cm. lata, integra vel subintegra, breviter pubescentia. *Capitulum* 6 cm. diametro; involucri bracteae subtriseriatae, recurvatae, lineari-lanceolatae, mucronulatae, inter se subaequales, 1 cm. longae, 2 mm. latae, virides, albo-ciliatae, extra pilosae pilis basi nigris, intus inferne glabrae, superne appresse pubescentes. *Flores radii* circiter 40; tubus subnullus; lamina linear-lanceolata, apice bifida vel trifida, 2·5 cm. longa, 3–5 mm. lata, pallide violacea, medio 7-nervia; stylus 7 mm. longus. *Flores disci* numerosi, pallide flavi; tubus 5 mm. longus, infra medium constrictus viridisque, medio parce pilosus; lobi lanceolati, subobtusi, 1·25 mm. longi, aurantiaci; ovarium 2 mm. longum, pubescens; pappus biseriatus, externus vix 1 mm. longus, internus filiformis, 6 mm. longus, barbellatus.—J. Hutchinson.

The pleasing little *Aster* here figured was discovered by Mr. W. Purdom, while collecting on behalf of Messrs. J. Veitch and Sons, at Tai-pei-shan in the province of Shensi, Northern China. It flowered for the first time in the nursery of Messrs. Veitch at Coombe Wood in May 1912, and the material for our illustration was derived from one of their plants. In habit *A. Purdomii* resembles some of the forms of the widely distributed *A. alpinus*, Linn., figured long ago at t. 199 of this work, but it may be distinguished from this and indeed from all the other Asters of Asia by the distinctly stalked ovate or ovate-elliptic radical leaves with two or three small marginal teeth, which are associated with flowering stems that are

scarcely leafy and bear solitary heads. The species, which is perfectly hardy, promises to be a desirable acquisition for the rock garden; it has a tufted habit and flowers freely.

DESCRIPTION.—*Herb*, about 6 in. high; stems 1-headed, sparingly leafy below, elsewhere naked, greenish-purple, pubescent with reflexed hairs. *Leaves*: radical few, petioled, ovate or ovate-elliptic, obtuse, base rounded or slightly cuneate, margin 2–3-denticulate on each side, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, $\frac{3}{4}$–1 in. wide, chartaceous, triplinerved, shortly setulose-pubescent on both surfaces, nerves sunk above, raised beneath; cauline sessile, oblong-lanceolate, subacute, up to $1\frac{1}{4}$ in. long, $\frac{3}{4}$ in. wide, entire or nearly so, shortly pubescent. *Flower-heads* $2\frac{1}{2}$ in. across; involucral bracts obscurely 3-seriate, recurved, linear-lanceolate, mucronulate, almost uniform, $\frac{2}{5}$ in. long, 1 lin. wide, green, white-ciliate, pilose outside with black-based hairs, inside glabrous low down, adpressed pubescent upwards. *Ray-florets* about 40; tube obsolete, limb linear-lanceolate, 2–3-fid at the tip, 1 in. long, $1\frac{1}{2}$–$2\frac{1}{2}$ lin. wide, pale violet, 7-nerved; style $\frac{1}{4}$ in. long. *Disk-florets* numerous, pale yellow; tube $\frac{1}{5}$ in. long, green and constricted below the middle, at the middle sparingly pilose; lobes lanceolate, somewhat blunt, under 1 lin. long, orange; ovary 1 lin. long, pubescent; pappus 2-seriate, hair of the outer series very short, under $\frac{1}{2}$ lin. long, of the inner series filiform, barbellate, $\frac{1}{4}$ in. long.

Fig. 1, ray-floret with portion of limb removed; 2, disk-floret; 3 and 4, pappus-hairs; 5, anthers:—*all enlarged.*

M.S. del. J.N. Fitch lith

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Tab. 8477.

COELOGYNE cristata.

Temperate Himalaya.

Orchidaceae. Tribe Epidendreae.

Coelogyne, *Lindl.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 518.

Coelogyne cristata, *Lindl. Collect. Bot.* sub t. 33; *Gen. et Sp. Orch.* p. 39; *Fol. Orch. Coelog.* p. 8; *et in Bot. Reg.* 1841, t. 57; *Hook. f. Fl. Brit. Ind.* vol. v. p. 829; *King & Pantl. in Ann. Roy. Bot. Gard. Calc.* vol. viii. p. 133, t. 184; *Pfitzer in Engl. Pflanzenr., Orch.-Coelog.* p. 65; species distinctissima, scapis arcuatis brevibus floribus maximis albis et labelli lamellis longe fimbriatis distinguenda.

Herba epiphytica. *Rhizoma* repens, validum, vaginis numerosis imbricatis vestitum. *Pseudobulbi* subdistantes, ovato-ellipsoidei, demum longitudinaliter corrugati, 4–6 cm. longi, diphylli. *Folia* lanceolata, acuminata, subplicata, prominenter trinervia, basi attenuata vel breviter petiolata, 12–25 cm. longa, 2–2·5 cm. lata. *Scapi* ad basin pseudobulbi, 15–20 cm. longi, arcuati, basi vaginis imbricatis vestiti; racemi 5–7-flori. *Bracteae* patentes, oblongo-lanceolatae, acutae, 4–5 cm. longae. *Pedicelli* 3–4 cm. longi. *Flores* speciosi, albi, labelli cristis flavis. *Sepala* et *petala* patentia, subaequalia, oblonga, subobtusa, undulata, circiter 5 cm. longa. *Labellum* trilobum, circiter 4 cm. longum; lobi laterales oblongi, obtusi, basin columnae amplectentes, apice subreflexi; lobus medius suborbicularis vel late rhomboideo-ovatus, obtusus, 2–2·5 cm. latus; discus 5-carinatus; carinae humiles, in fimbrias longas solutae, ante isthmum in laminam brevem triangularem crenatam extensae. *Columna* clavata, e basi gracili late alata, circiter 3 cm. longa. *Pollinia* 4, oblonga, compressa, apice in massulam granulosam cohaerentia.—*Cymbidium speciosissimum*, Don Prodr. Fl. Nepal. p. 35.—R. A. Rolfe.

The *Coelogyne* here figured has long been regarded as perhaps the most beautiful species in the genus. Easy to cultivate in a warm greenhouse, it is generally grown and is held in much esteem. This esteem is well deserved; its racemes of large white flowers are remarkably elegant; their value is enhanced by the fact that they are developed in winter and last several weeks. They are consequently much prized as materials for bouquets, wreaths and decorations. Sometimes in this country specimen clumps over six feet across and bearing hundreds of flowers have been grown, but the finest display in our greenhouses fails to convey any conception of the appearance of a forest-clad spur in the Eastern Himalaya when *C. cristata* is in blossom. Most abundant from Central Nepal eastward to Bhutan, the species actually extends from Kumaon in the west to the

Jaintea and Khasia Hills in the east. The plant appears to have been first met with by Wallich near Khatmandu in 1819, and was described from Wallich's material independently by Lindley in 1821 and by D. Don in 1825. The species was introduced to cultivation by Mr. Gibson in 1837; the first plant to flower in England did so early in 1841 in the collection of Mr. G. Barker of Springfield, Birmingham. As might be anticipated in a species with so wide a range, *C. cristata* varies somewhat; two of the most beautiful varieties known in collections are *Lemoniana*, which appeared many years ago in the collection of Sir Charles Lemon, at Carclew near Falmouth, and *alba*, which appeared first in the collection of Mr. T. A. Titley, Leeds; a third very striking variety is that known as *maxima*, introduced by Messrs. Sander and Sons, St. Albans. In Sir C. Lemon's variety the hairs on the lip are light citron-yellow in place of orange; in that of Mr. Titley the flowers are pure white throughout. The variety imported by Messrs. Sander has larger flowers with petals and sepals of firmer texture than in the type.

DESCRIPTION.—*Herb*, epiphytic; rhizome stout, creeping, clothed with many imbricate sheaths; pseudobulbs somewhat separated, ovate-ellipsoid, ultimately longitudinally wrinkled, 1½–2½ in. long, 2-foliate. *Leaves* lanceolate, acuminate, somewhat plicate, distinctly 3-nerved, narrowed to the base and sometimes shortly petioled, 5–12 in. long, ¾–1 in. wide. *Scapes* basal, 6–8 in. long, curved, clothed below with imbricate sheaths; racemes 5–7-flowered; bracts spreading, oblong-lanceolate, acute, 1¾–2 in. long; pedicels 1¼–1½ in. long. *Flowers* showy, white, the lip usually with yellow crests. *Sepals* and *petals* spreading, subequal, oblong, somewhat blunt, undulate, about 2 in. long. *Lip* 3-lobed, about 1½ in. long; lateral lobes oblong, obtuse, embracing base of column, somewhat reflexed at the tip; mid-lobe suborbicular or wide rhomboid-ovate, blunt, ¾–1 in. wide; disk 5-crested; crests shallow, breaking up into long processes and continued beyond the isthmus as a short triangular crenate lamina. *Column* clavate, wide-winged from a narrow base, about 1¼ in. long. *Pollinia* 4, oblong, compressed, cohering at the tip in a granular body.

Fig. 1, lip; 2, column; 3, pollinia:—*all enlarged.*

M.S. del. J.N. Fitch. lith.

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TAB. 8478.

RHODODENDRON SUBLANCEOLATUM.

Japan.

ERICACEAE. Tribe RHODOREAE.

RHODODENDRON, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron sublanceolatum, *Miquel, Ann. Mus. Bot. Lugd.-Bat.* vol. ii. p. 163; *Gard. Chron.* 1911, vol. xlix. p. 342, cum tab.; ab affini *R. indico,* Sweet, calycis lobis majoribus ciliatis dorso glabris, corolla majore recedit.

Frutex; ramuli primo adpresse rufulo-setosi, setis mox pallescentibus dein deciduis, brunneo- vel fusco-brunneo-corticati. *Folia* lanceolata, anguste elliptica vel oblanceolata, utrinque angustata, apice mucronulata, interdum obtusa vel fere rotundata, 2·5–7 cm. longa, 1–2·9 cm. lata, coriacea, subtus costa nervisque setis rufis iis ramulorum costaeque supra similibus mox pallescentibus, supra nervulis pilis rufis deciduis instructa, nervis lateralibus utrinque 5–9 cum transversis pagina inferiore prominulis superiore immersis, margine sicco recurvo strigoso-ciliata, petiolo plerumque vix 1 cm. longo adpresse rufo-setuloso setulis mox pallescentibus dein plus minusve deciduis suffulta. *Flores* speciosi, terminales; bracteae deciduae, circiter 1·5 cm. longae, dorso rufulo-strigosae; pedicelli bracteas paulo superantes, rufulo-strigosi. *Calycis* segmenta inter se parum inaequalia, plerumque oblonga, apice rotundata, ad 6 mm. longa et 4 mm. lata, dorso glabra; strigoso-ciliata. *Corolla* ad 5·5 cm. longa, vix ad medium lobata, lobis ovato- vel elliptico-rotundatis. *Stamina* 10, inclusa; filamenta parte inferiore pubescentia. *Ovarium* ambitu oblongum, adpresse strigosum; stylus stamina paulo excedens, glaber.—*R. indicum,* Sweet, var. *sinensis,* Buerger ex Miquel, Ann. Mus. Bot. Lugd.-Bat. vol. i. p. 33. *R. indicum,* Sweet, var. *sublanceolatum,* Makino in Bot. Mag. Tokyo vol. xviii. p. 100. *Azalea sublanceolata,* O. Kuntze Rev. Gen. Pl. vol. ii. p. 387.—W. G. CRAIB.

The subject of our illustration, *Rhododendron sublanceolatum,* is an Azalea which is cultivated rather widely in Japan as the 'Chinese Azalea.' It is undoubtedly very nearly allied to *R. indicum,* Sweet, and observers so competent as Dr. Buerger and Mr. Makino have even suggested that our plant may be considered a variety of that Chinese species. But *R. sublanceolatum* differs so markedly from *R. indicum,* not only in the size of the flowers but in the form of the calyx, that this suggestion appears to be as unnecessary from the systematic as it is inconvenient from the cultural standpoint, and there is no doubt that Mr. Craib is justified in treating the two as distinct. It now appears, moreover, that *R. sublanceolatum*

is not a Chinese plant at all, but that its home is in the Loo-Choo Islands. The material from which our figure was prepared was taken from a plant growing in the nursery of Mr. R. C. Notcutt at Woodbridge. The plant selected was one of the richest as regards tint of corolla in a large and rather variable batch in flower there in June 1912. Under cultivation this species should receive much the treatment that is required in the case of the hardier forms of *R. indicum*. In a peaty moist soil it is likely to prove robust in sheltered spots in the south-western parts of the United Kingdom, but as to its capacity to withstand the rigours of a really severe winter experience is wanting. It is increased by cuttings of moderately firm wood in late summer placed in bottom heat.

DESCRIPTION.—*Shrub*; twigs at first adpressed reddish-setulose, hairs soon getting paler and at length disappearing; bark brown or tawny. *Leaves* lanceolate, narrow-elliptic or oblanceolate, tapering to both extremities, mucronulate, sometimes obtuse or almost rounded, margin strigose-ciliate, when dry recurved, 1–2¾ in. long, ⅓–1¼ in. wide, coriaceous, more or less pubescent on the nerves on both surfaces, lateral nerves 5–9 on each side somewhat sunk above and raised beneath, as are the transverse veins; petiole usually under ⅓ in. long, adpressed reddish-setulose, the hairs soon becoming paler and ultimately disappearing. *Flowers* showy, terminal; bracts deciduous, about ⅔ in. long, reddish-strigose on the back; pedicels rather longer than the bracts, reddish-strigose. *Calyx-lobes* slightly unequal, usually oblong, rounded at the tip, 3 lin. long, 2 lin. wide, glabrous behind, margin strigose and glandular-ciliate. *Corolla* over 2 in. long, lobed not quite to the middle, lobes ovate- or elliptic-rounded. *Stamens* 10, included, filaments pubescent in the lower half. *Ovary* oblong, adpressed-strigose; style rather longer than the stamens, glabrous.

Fig. 1, calyx and pistil; 2, section of calyx, showing ovary; 3, hairs; 4 and 5, stamens; 6, transverse section of ovary:—*all enlarged.*

M.S.del.J.N.Fitch lith

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Tab. 8479.

CYTISUS nigricans.

Europe.

Leguminosae. Tribe Genisteae.

Cytisus, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 484.

Cytisus nigricans, *Linn. Sp. Plant.* ed. i. p. 739; *Koch, Syn.* ed. ii. p. 169; *Nyman, Conspectus* p. 156 *et Suppl.* p. 84; *Reichb. Ic.* vol. xxii. t. mmlxxi; ab affini *C. glabrescente,* Sart., racemis terminalibus legumine haud glabro recedit.

Frutex; ramuli primo adpresse breviter albo-pubescentes, mox glabri vel fere glabri, fusco-corticati. *Folia* trifoliolata vel rarissime quinquefoliolata, petiolo 5–15 mm. longo supra canaliculato breviter adpresse pubescente suffulta; foliola oblanceolata vel late oblanceolata, apice rotundata, apiculata, basi cuneata, lateralia 8–15 mm. longa, 5–8 mm. lata, terminali parum majore, chartacea, supra glabra, subtus parce adpresse hirsutula, nervis lateralibus pagina utraque obscuris vel subobscuris, breviter petiolulata. *Racemi* terminales sub anthesin circiter 17 cm. longi, rhachi ramulis novellis simili; bracteae deciduae; pedicelli ad 6 mm. longi, ante anthesin apice decurvati, sub anthesin recti, indumento ramulorum; bracteola solitaria, 2·5 mm. longa, paulo infra pedicelli apicem inserta, plerumque in fructu persistens. *Calyx* bilabiatus, 3 mm. longus, extra adpresse breviter pubescens, dentibus parvis lanceolatis. *Corolla* lutea; vexillum refractum suborbiculare, emarginatum, circiter 5·5 mm. longum et 6·5 mm. latum, extra glabrum, intus versus basin tenuiter pilosum, ungui fere 1·5 mm. longo; alae 6 mm. longae, 3·5 mm. latae, ungui circiter 2 mm. longo; carina 7·5 mm. longa, 4 mm. lata, ungui 1·5 mm. longo. *Stamina* monadelpha. *Ovarium* 7 mm. altum; stylus 4 mm. longus. *Legumen* plerumque circiter 3 cm. longum, 5 mm. latum, fuscum, tenuiter adpresse pubescens. *Semina* circiter 3·5 mm. longa, pallide brunnea, nitida, strophiolo parvo albo.—*C. glaber, a,* Lamk. Fl. Franc. vol. ii. p. 621. *C. virgatus,* Salisb. Prodr. p. 330. *C. unibracteatus,* Lindem. Prodr. Fl. Czerniz. in Bull. Soc. Nat. Mosc. vol. iv. p. 471. *Genista nigricans,* Scheele in Flora vol. xxvi. p. 438; Briquet, Les Cytises des Alpes maritimes p. 122.—W. G. Craib.

The Broom which forms the subject of our illustration, an old favourite in gardens, is useful in flowering at a season, from the end of June to August, when the majority of shrubs have gone out of bloom. Its tall erect racemes make it very distinct among the hardy Brooms. The wealth of blossom is followed by a great quantity of seed which enables the stock to be easily renewed. But this excessive fertility is associated with a tendency to be short-lived, and it is therefore well to go over the plants as soon as the flowers are past and cut away all save a few of the old racemes. As the flowers are borne on the growths of

the current season this Broom may be pruned back in spring to within an inch or two of the old wood. Its other requirements are best met by a well-drained loamy soil and a sunny position. Usually considered a *Cytisus* this plant has, however, been treated by Bentham and Hooker as the type of a very distinct monotypic section, *Lembotropis*, within that genus, and Dr. Briquet, who has added to that section another species, *C. glabrescens*, Sart., has transferred the two allied forms composing it to the genus *Genista*, Linn. In so far as regards the former conclusion there can be little hesitation in following Dr. Briquet; to whichever of the two genera our plant be referred its nearest ally is *C. glabrescens.* But so far as the latter is concerned it appears, as yet, preferable to follow Bentham and Hooker.

Description.—*Shrub*; twigs at first shortly adpressed white-pubescent, soon becoming glabrous; their bark tawny. *Leaves* 3-foliolate or rarely 5-foliolate; leaflets oblanceolate or wide-oblanceolate, rounded and apiculate, base cuneate, the lateral $\frac{1}{3}$–$\frac{2}{3}$ in. long, $\frac{1}{5}$–$\frac{1}{3}$ in. wide, the terminal rather longer, papery, glabrous above, sparingly adpressed-hairy beneath, lateral nerves rather obscure on both surfaces; petiolules very short; petiole $\frac{1}{5}$–$\frac{2}{3}$ in. long, channelled above, shortly adpressed-pubescent. *Racemes* terminal, in flower 6–7 in. long; rhachis tomentose like the young twigs; bracts deciduous; pedicels up to $\frac{1}{4}$ in. long, decurved at the tip, in flower straight, tomentose like the rhachis; bracteole solitary to and near the tip of each pedicel, usually persisting in fruit. *Calyx* 2-lipped, $1\frac{1}{2}$ lin. long, shortly adpressed-pubescent outside, teeth small, lanceolate. *Corolla* yellow; standard refracted, suborbicular, emarginate, under $\frac{1}{4}$ in. long, over $\frac{1}{4}$ in. wide, glabrous outside, thinly pilose near the base within, claw under 1 lin. long; wings $\frac{1}{4}$ in. long, $\frac{1}{7}$ in. wide, claw 1 lin. long; keel $\frac{1}{3}$ in. long, $\frac{1}{6}$ in. wide, claw under 1 lin. long. *Stamens* monadelphous. *Ovary* under $\frac{1}{3}$ in. long; style $\frac{1}{6}$ in. long. *Pod* usually about $1\frac{1}{4}$ in. long, $\frac{1}{5}$ in. wide, tawny, thinly adpressed-pubescent. *Seeds* under $\frac{1}{6}$ in. long, pale brown, shining; strophiole small, white.

Fig. 1, flower, petals removed; 2, standard; 3, wing-petal; 4, keel-petal; 5, pistil; 6, pods; 7 and 8, segments of pod with solitary seed attached:—*all enlarged except* 6 *and* 7, *which are of natural size.*

1

6

5.

4

3

2

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Tab. 8480.

HELIOTROPIUM anchusaefolium.

South America.

Boragineae. Tribe Heliotropieae.

Heliotropium, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 843.

Heliotropium anchusaefolium, *Poir. Encyc. Meth. Suppl.* vol. iii. p. 23; *Cham. in Linnaea* vol. iv. p. 458; species *H. sidaefolio*, Cham., affinis, sed foliis lanceolatis vel linearibus sessilibusque differt.

Herba perennis. *Caules* erecti, quadrangulati, hispidi. *Folia* alterna, lanceolata vel lineari-lanceolata, membranacea, integra, margine undulata, apice acuta vel acutiuscula, sessilia, circiter 6·5 cm. longa, 1–1·6 cm. lata, supra scabra, infra nervis hispida. *Calyx* 5-partitus, viscidulo-pilosus, 2·5 mm. longus; segmenta linearia. *Corolla* infundibuliformis, 5-loba lobis rotundatis; violacea; limbus circiter 6 mm. latus, tubus circiter 4 mm. longus supra stamina intus villosus. *Stamina* 5, sessilia, prope basin corollae tubi inserta; antherae 1·5 mm. longae, triangulari-cordatae, basifixae. *Ovarium* parvum, glabrum; stigma peltatum, apice conicum, sessile.—*Heliophytum anchusaefolium*, DC. Prodr. vol. ix. p. 554.—J. J. Clark.

The Heliotrope which we figure is a native of South-eastern Brazil, Uruguay and Buenos Ayres. It bears a strong general resemblance to the Sweet-scented Heliotrope, *H. peruvianum*, Linn., figured long ago at t. 141 of this work, but is readily distinguished from its fragrant Peruvian congener by having odourless flowers. The species has long been known in gardens both in Europe and in North America, and we learn from Gray that it has become subspontaneous in Eastern Florida and often appears as a ballast weed about Philadelphia. The earliest description, which we owe to Poiret, appeared in 1813; in 1829 it was more fully described, apparently from South Brazil specimens of Sellow's collecting, by Chamisso. There has never been any confusion between *H. anchusaefolium* and *H. peruvianum*, whether in herbaria or in gardens. But there has been, and still often is, both among horticulturists and botanists, a tendency to confuse with Poiret's plant that described by Sir W. J. Hooker at t. 3096 of this work as *Tournefortia heliotropioides*. The two plants are, however, specifically quite distinct, for that described by Hooker has broad elliptic leaves with petioles three-quarters of an

inch long, while its flowers are somewhat smaller than those in Poiret's plant with the corolla less deeply lobed. But if the description given by Hooker be accurate, and there is no justification for the formation of a contrary conclusion, the two plants belong not only to different species, but to distinct genera. In the plant named *H. anchusaefolium* by Poiret, the fruit at first is divided into a pair of two-seeded mericarps, each of which finally divides into a couple of one-seeded nutlets; just before this final division, and marking the plane in which it occurs, we find a groove round the fruit. In the plant named by him *Tournefortia heliotropioides*, the fruit is described by Hooker as a four-stoned berry. Dr. Gürke, accepting the general but erroneous belief that Poiret's plant is the same as Hooker's, and further adopting the description of the fruit given by Hooker as accurate, has transferred *Tournefortia heliotropioides*, Hook., to the genus *Cochranea* as *C. anchusaefolia*, Gürke. Hooker's original description, however, points rather to his plant being, as he originally said, a *Tournefortia*. But, however this may be, the popular belief which confuses Hooker's plant with that now figured, is one that cannot be sustained. For the material from which our illustration has been prepared we are indebted to Miss Willmott, in whose garden at Warley Place it flourishes freely. It also thrives well and flowers profusely at Kew, but requires to be protected from cold in winter.

Description.—*Herb*, perennial; stems erect, 4-angled, hispid. *Leaves* alternate, lanceolate or linear-lanceolate, membranous, entire, undulate, acute or subacute, sessile, about $2\frac{1}{2}$ in. long, $\frac{1}{2}$–$\frac{2}{3}$ in. wide, scabrid above, hispid on the nerves beneath. *Calyx* 5-partite, viscidly hairy, $\frac{1}{10}$ in. long; lobes linear. *Corolla* violet, funnel-shaped, 5-lobed, lobes rounded; limb about $\frac{1}{4}$ in. across, tube $\frac{1}{6}$ in. long, villous within above the stamens. *Stamens* 5, sessile, inserted near the base of the tube; anthers under 1 lin. long, triangular-cordate, basifixed. *Ovary* small, glabrous; stigma peltate, conic at the tip, sessile.

Fig. 1, portion of a leaf; 2, flower; 3, section of calyx, with pistil; 4, corolla, laid open; 5 and 6, anthers:—*all enlarged.*

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Tab. 8481.

AGAVE Haynaldii.

Mexico or Central America.

Amaryllidaceae. Tribe Agaveae.

Agave, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 733.

Agave (§ Littaea) **Haynaldii**, *Tod. Hort. Bot. Pan.* vol. i. p. 88, t. 24; *Terracc. f. Pr. Contr. Monogr. Agav.* p. 25; *Baker*, *Handb. Amaryll.* p. 170; species ex affinitate *A. expatriatae*, Rose, sed differt foliis numerosioribus longioribus et inflorescentia altissima.

Frutex acaulis; rosula circiter 80-folia, 1–2 m. alta, 2 m. lata. *Folia* erecto-patentia vel levissime incurvula, 9–11 dm. longa, lanceolato-ensiformia, longe acuminata et in spinam terminalem fere 3 cm. longam supra late canaliculatam subtriquetram exeuntia, supra medium 9–11 cm. lata, basin versus valde angustata cervice longo 5·5 cm. lato carnoso utrinque valde convexo et basi circiter 5 cm. crassa, medium versus planiuscula, superne subcanaliculata, tenuius coriaceo-carnosa, subtus convexa, utrinque obscure viridia nitida laevissima, subtus sine lineis obscurioribus supra juvenilia tantum vitta pallidiore notata, margine angusto corneo primum castaneo dein cinereo aculeato continuo vel folii medio plerumque interrupto cincta, aculeis majusculis e basi latiore deltoideo-uncinatis saepe minoribus interjectis vel cum majoribus aggregatis, 5–9 mm. longis, basalibus minoribus crebrioribusque, summis remotioribus et sub apice folii tractu brevi deficientibus. *Inflorescentia* elata, valida, circiter 7·5 m. alta; pedunculus 1·5 m. longus, 8 cm. diametro, viridis levissime pruinosus, bracteis vacuis e basi 4–4·5 cm. lata abrupte angustatis convolutis reflexis apice pungentibus, inferioribus 30 cm. longis subremote vestitus; spica cylindrica longissima basi laxior superne densissima, alabastris glauco-viridibus, floribus expansis viridi-luteis; bracteae filiformes reflexae, 20 mm. longae; flores plerumque 2-ni vel 3-ni, rarissime 4–8-ni, pedicellis 5–6 mm. longis crassis suffulti. *Perianthii* segmenta 19–22 mm. longa, carnosula, oblonga, obtusa, exteriora dorso crasse carinata, basi in tubum brevissimum extra 9–10 mm. latum 6-sulcatum connata, mox evanescentia et stamina amplectentia. *Filamenta* 5–5·3 cm. longa, pallide viridi-lutea, gracilia, antheris luteis 20–22 mm. longis. *Ovarium* subcylindraceum, 2–2·5 cm. longum, basi 7–8 mm. crassum, superne constrictum, pallide viride glauco-pruinosum; stylus demum 5·5 cm. longus, filamentis robustior; stigma paullo incrassatum, subtrilobum.—A. Berger.

The *Agave* which the late Professor Todaro named *A. Haynaldii*, in honour of the distinguished botanist Archbishop Haynald, is one that flowered in 1878 in the garden of Mr. Whitacker at Ai Colli near Palermo, and was probably originally obtained from some collection in England. The plant from which our illustration has been prepared is one sent by Dr. H. Ross from the Palermo Botanic Garden in May 1897 to that of the late Sir T. Hanbury at La

Mortola. It may therefore be accepted as an authentic example of *A. Haynaldii*, though it is found on comparing the La Mortola plant with the description and figure supplied by Todaro that there is some degree of variability in the size, disposition and direction of the lateral spines and in the dimensions and arrangement of the flowers. The horny leaf-border is less continuous and is generally interrupted in the middle in the La Mortola example; its flowers, too, are somewhat smaller and are generally disposed in twos or threes, less often in fours; there are never, as in the original Palermo plant, as many as eight in one cluster. The species to which *A. Haynaldii* bears the greatest resemblance is that described in 1900 as *A. expatriata* by Dr. Rose; a comparison of the figures and descriptions of the two plants shows that they are very, perhaps too closely related. A member of the 'Marginatae' group of Littaeas, easily recognised by the horny border of the leaves and by the short perianth-tube with lobes which embrace the stamens as soon as the anthers are ripe, *A. Haynaldii* is readily distinguished from the others by its larger size. The La Mortola example here figured showed signs of flowering towards the end of September 1910, the spike pushing with considerable rapidity and the first flowers opening in November; the apical flowers opened in February 1911.

Description.—*Shrub*, stemless; rosette with about 80 leaves, some 6 ft. wide, 4 ft. high. *Leaves* erecto-patent or slightly incurved, $3\frac{1}{4}$–$3\frac{1}{2}$ ft. long, 2 in. thick and very biconvex at the base, narrowed and flat towards the middle and somewhat channelled below the point, lanceolate-ensiform, about $3\frac{1}{2}$–$4\frac{1}{2}$ in. wide above the middle, thence tapering gradually into a long point with a wide-channelled, nearly 3-quetrous, brown end-spine, about 1 in. long, constricted towards the base into a long neck, $2\frac{1}{8}$ in. wide, convex underneath but gradually thinner towards the point, coriaceous, dark glossy green, without darker lines on the back and only in young plants with a pale band on the upper surface; the margin with a spiny horny border, usually interrupted about the middle of the leaf, when young chestnut brown, soon becoming ash-grey, slightly repand between the spines, the lowest small and close, those of the

middle of the leaf $2\frac{1}{2}$–$4\frac{1}{2}$ lin. long, deltoid-uncinate from a broader base, generally with an intercalated smaller, occasionally 1–2 or more aggregated with a larger, the upper spines more distant and smaller, the leaf-point for about 2–3 in. unarmed. *Inflorescence* a cylindric spike 22–23 ft. high; peduncle stout, $4\frac{1}{2}$ ft. high over 3 in. thick, with many reflexed subulate convolute scarious empty bracts, 8–13 in. long; flowers generally 2–3 together, rarely 4 or 8, greenish-yellow, the buds and all other parts of the inflorescence pruinose; bracts filiform, reflexed, pedicels very short, thick. *Perianth-segments* oblong, obtuse, fleshy, pale yellowish-green, $\frac{3}{4}$–1 in. long, soon withering and embracing the stamens, the outer 3 with a thickened dorsal rib, connate below in a very short 6-furrowed tube, $\frac{2}{5}$ in. wide. *Stamens* inserted at the mouth of the tube; filaments erect, 2 in. long or longer; anthers yellow, under 1 in. long. *Ovary* cylindric, $\frac{3}{4}$–1 in. long, 3–$3\frac{1}{2}$ lin. wide, narrowed into a short beak under the perianth-tube; style rather longer and stouter than the stamens; stigma slightly capitate, obscurely 3-lobed.

Fig. 1 and 2, anthers; 3, stigma; 4, sketch of an entire plant:—*all enlarged except* 4, *which is much reduced.*

C

B

A

5

3

1

4

2

6.

M.S. del. J.N. Fitch lith

Vincent Brooks Day & Son Lith. imp

L. Reeve & Co. London.

Tab. 8482.

CYTISUS × Dallimorei.

Garden Hybrid.

Leguminosae. Tribe Genisteae.

Cytisus, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 484.

Cytisus Dallimorei, *Rolfe in Gard. Chron.* 1910, vol. xlvii. p. 397; *Kew Bulletin*, 1910, p. 323; *Garden*, 1910, p. 291; inter *C. albo*, Linn. et *C. scoparii*, Link, var. *Andreana*, Hort., hybrida.

Frutex deciduus; caulis tandem 2–2·5-metralis, virgatim ramosus; ramuli angulati primum adpresse pubescentes. *Folia* 1–3-foliolata; foliola lateralia anguste elliptica vel lanceolata, terminalia oblanceolata, 7–18 mm. longa, 2–3 mm. lata, sessilia, acuta, sordide viridia, ciliata, primum utrinque adpresse cinereo-pubescentia, tandem supra glabrescentia; petiolus 3–12 mm. longus, parum alatus. *Flores* speciosi, papilionacei, nodis annotinis singuli vel bini; pedicelli pubescentes, graciles 6–8 mm. longi. *Calyx* galeatus, 2-labiatus, 3 mm. longus, glaber. *Vexillum* orbiculari-cordatum breviter unguiculatum, parum cucullatum, 1·2–1·5 cm. longum, pallide roseo-purpureum et basin versus rubro-lineolatum. *Alae* 1·2 cm. longae, praesertim versus apices laete kermesinae. *Carina* alba, purpureo-tincta. *Stamina* styloque glabra. *Ovarium* sericeo-pubescens. *Legumen* 2·5–3 cm. longum, 4–6 mm. latum secus suturas sericeum, ceterum minutissime verrucosum.—W. J. Bean.

The *Cytisus* which forms the subject of our illustration is a hybrid raised at Kew in 1900. A plant of *C. scoparius*, Link, var. *Andreana*, Hort. (*Genista Andreana*, A. Puiss.), was isolated in a greenhouse and the flowers were fertilised with the pollen of the well-known White Portugal Broom, *C. albus*, Linn. There is thus no doubt as to its origin, and it may be remarked in passing that it is as yet the only hybrid broom intentionally produced, other hybrids being the result of chance crosses made by insects. André's Broom, now well known in gardens, was discovered in Normandy about thirty years ago; it differs from typical *C. scoparius* in having rich brown-crimson wing-petals, the rest of the flower being yellow as in the type. The flowers of *C. albus* are milky-white, sometimes slightly tinged with rose. In *C. Dallimorei* the yellow of the female parent has almost disappeared and the whole flower has assumed some shade of rosy-purple, the wing-petals alone showing some approach to the rich colouring of the wings in André's Broom. Only two seedlings were raised from the original cross—one with

rosy flowers (*C. Dallimorei*), the other with yellow flowers as shown at fig. B of our plate. From this second, yellow-flowered plant has been raised a seedling which has cream-coloured flowers touched with rose, as shown at fig. C of our plate. This last is a very promising garden plant with much the character of *C. praecox*, Hort., but without the offensive odour of that broom. The material for our plate has been derived from the original plants at Kew referred to above. As a garden plant *C. Dallimorei* is of great promise. It has scarcely the vigour of either parent; the original plant, indeed, was for several years of feeble growth and vigour, and it was only when a twig was made strong enough to graft on a young Laburnum that its continued existence became assured. This grafted plant was the first to flower, and the stock has since been increased from it by the same method. The hybrid produces good seed and a number of plants have been raised, the flowering of which will be watched with interest.

DESCRIPTION.—*Shrub*, deciduous, ultimately 6 to 8 ft. high, of thin, virgate habit; branchlets angled and clothed with adpressed hairs when young. *Leaves* unifoliolate or trifoliolate; lateral leaflets narrowly elliptical or lanceolate, the middle one oblanceolate, $\frac{1}{3}$ to $\frac{3}{4}$ in. long, $\frac{1}{12}$ to $\frac{1}{8}$ in. wide, sessile, acute, dull dark green, ciliate, and at first clothed with grey adpressed hairs on both surfaces, glabrescent above; petiole $\frac{1}{8}$ to $\frac{1}{2}$ in. long, flat and slightly winged. *Flowers* papilionaceous, produced in May from the nodes of the preceding year's growth, solitary or in pairs. *Calyx* helmet-shaped, 2-lipped, $\frac{1}{8}$ in. long, glabrous. *Standard* orbicular-cordate with a short claw, somewhat cucullate, $\frac{1}{2}$ to $\frac{5}{8}$ in. long, pale purple touched with rose and with deeper lines at the base; wing petals $\frac{1}{2}$ in. long, rich crimson, especially towards the ends; keel white, tinged with purple; peduncle slender, $\frac{1}{4}$ to $\frac{1}{3}$ in. long, pubescent. *Stamens* and *style* glabrous. *Ovary* clothed with silky hairs. *Pod* 1 to $1\frac{1}{4}$ in. long, $\frac{1}{6}$ to $\frac{1}{4}$ in. wide, pubescent on the sutures, roughened with minute warts.

Fig. A, CYTISUS DALLIMOREI; B, yellow-flowered seedling from same seed-pod as A; C, seedling from B; 1, flower, petals removed; 2, standard; 3 and 4, wing- and keel-petals; 5, pistil; 6, section of ovary:—A–C, *of natural size*; 1–6, *enlarged*.

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d imp.

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TAB. 8483.

MAGNOLIA SALICIFOLIA.

Japan.

MAGNOLIACEAE. Tribe MAGNOLIEAE.

MAGNOLIA, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 18.

Magnolia salicifolia, *Maxim. in Bull. Acad. Pétersb.* vol. xvii. (1872), p. 418; *Mélanges Biol.* vol. viii. p. 509; *Franch. et Savatier, Enum. Pl. Jap.* vol. i. p. 16; *Sargent in Garden and Forest,* vol. vi. p. 65, fig. 12; *Sargent, For. Fl. Jap.* p. 10, t. 4; *Shirasawa, Ic. Essences For. Jap.* vol. i. p. 72, t. 40; *C. K. Schneider, Ill. Handb. Laubholzk.* vol. i. p. 329; *Gard. Chron.* 1912, vol. li. p. 222, fig. 99; affinis *M. Kobus,* DC., a qua foliis lanceolatis, gemmis glabris facile distinguitur.

Arbor decidua, gracilis, 4·5–6 m. alta, trunco 3 dm. diametro. *Ramuli* hornotini laeves, annotini parce lenticellati. *Gemmae* glabrae. *Folia* lanceolata vel oblongo-lanceolata, acute vel obtuse acuminata, basi obtusa vel subcuneata, 7–14 cm. longa, 2–5 cm. lata, supra opaca, viridia, subtus subglauca minute appresse puberula; nervi laterales utrinque 9–10; petioli graciles, 1–1·5 cm. longi. *Alabastra* hirsuta. *Flores* ramulos breves laterales terminantes, 7·5–10 cm. diametro; pedicelli virides, crassi, circiter 5 mm. longi. *Sepala* 3, patula, albido-viridula, ligularia, 3–4 cm. longa, mox decidua. *Petala* 6, nivea, anguste obovato-oblonga, 5–6 cm. longa, 1·3–1·8 cm. lata. *Filamenta* rosea; antherae connectivo ultra loculos producto. *Pistilla* viridia; stylus introrsum papillosus. *Fructus* aggregatus carneus, 4–7·5 cm. longus. *Semina* coccinea.—*Buergeria salicifolia,* Sieb. et Zucc. Fam. Nat. pars 1, p. 79. *Talauma salicifolia,* Miq. in Ann. Mus. Bot. Lugd. Bat. vol. ii. p. 258.—T. A. SPRAGUE.

The Magnolia which forms the subject of our plate differs from all the other species in cultivation in its thin narrow leaves and slender twigs. The flowers on the whole recall most readily those of *M. stellata*, Maxim., figured at t. 6370 of this work. In that species, however, all the perianth leaves are petaloid, whereas in *M. salicifolia*, the species now figured, the perianth is differentiated into a calyx and a corolla. In this regard *M. salicifolia* agrees with its nearest ally, *M. Kobus*, DC., but is readily distinguished by its lanceolate leaves and glabrous leaf-buds. According to Professor Matsumura *M. salicifolia* occurs in many localities in Nippon and is also found on Kiusiu; Mr. Shirasawa gives its range of altitude as from 1700 to 4500 feet above sea-level, and states that it naturally prefers a deep soil. The plant from which the material for our

figure was obtained is one of a batch purchased for Kew from a Japanese nursery in 1906. A few flowers were first produced in the spring of 1911; probably as the result of the great heat which marked the summer of 1911 a profuse crop of flowers appeared in March and April 1912. The leafy twig in our figure was drawn at the end of May, the plant at flowering time being quite leafless. *M. salicifolia* promises to make an elegant tree, an unusual feature in the genus. The Kew plants are growing admirably in a mixture of sandy loam and peat; the latter is useful in encouraging newly planted trees to become established, but is not essential at later stages, and therefore need only be placed near the roots of newly planted trees. We have so far no experience in the propagation of this Magnolia, but it will certainly be best on its own roots, so that for some years Japanese sources must be relied upon for trees and seeds.

DESCRIPTION.—*Tree*, deciduous, slender, 15–20 ft. high, stem 1 ft. thick; new shoots smooth, those a year old sparingly lenticelled; leaf-buds glabrous. *Leaves* lanceolate or oblong-lanceolate, sharply or bluntly acuminate, base rounded or somewhat cuneate, 3–6 in. long, $\frac{3}{4}$–2 in. wide, dull green above, somewhat glaucous and finely adpressed puberulous beneath; lateral nerves 9–10 on each side; petiole slender, $\frac{2}{5}$–$\frac{3}{5}$ in. long. *Flowers* at the end of short lateral twigs; buds hirsute; open flowers 3–4 in. across; pedicels green, stout, about $\frac{1}{5}$ in. long. *Sepals* 3, spreading, greenish-white, ligulate, $1\frac{1}{4}$–$1\frac{3}{4}$ in. long, soon disappearing. *Petals* 6, pure white, narrowly obovate-oblong, 2–$2\frac{1}{4}$ in. long, $\frac{1}{2}$–$\frac{3}{4}$ in. wide. *Filaments* rose-pink; connective produced. *Carpels* green; style papillose within. *Fruit* fleshy, $1\frac{1}{2}$–3 in. long. *Seeds* pink.

Figs. 1 and 2, base of petiole, showing its attachment to the stem; 3 and 4, anthers; 5, carpels; 6, two carpels in vertical section:—*all enlarged.*

2

1

3

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d imp.

L. Reeve & Co. London.

Tab. 8484.

ALOE Marlothii.

South Africa.

Liliaceae. Tribe Aloineae.

Aloe, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 476.

Aloe Marlothii, *Berger in Engl. Jahrb.* vol. xxxviii. p. 87; *et in Engl. Pflanzenr. Liliac. Aloin.* p. 312, fig. 133; *Wood, Natal Plants,* vol. vi. tt. 579, 580; species *A. Galpini,* Baker, quam maxime affinis sed foliis subtus spinoso-tuberculatis et floribus secundis luteis nec rubris, pauloque longioribus differt.

Frutex succulentus, caudice valido simplici rosulam foliorum ad 1 m. usque diametientem suffu'c ente, inferne densiuscule foliis exsiccatis persistentibus reflexis vestito. *Folia* conferta, 4–5 dm. longa, 15–17 cm. lata, ovato-lanceolata vel lanceolata, acuminata, margine aculeis conicis 0·5–1·5 cm. remotis armata, supra concaviuscula, apicem versus subcanaliculata, parte inferiore sparse spinoso-tuberculata vel omnino inermia, subtus convexa, subcarinata ubique spinoso-tuberculata et secus carinam tuberculis 1-serialibus notata vel nonnunquam subinermia, utrinque perglauca; aculeae apice brunneae. *Pedunculi* erecti, fere metrales repetite dichotome ramosi subcandelabriformesque, subpurpurascentes; rami subhorizontaliter patentes, apice leviter sursum recurvi, 1·5 cm. crassi. *Flores* secundi, omnes sursum spectantes simulac leviter deflexi; bracteae reflexae, 6–7 mm. longae, ovatae, acutae, submembranaceae, pallide brunneae; pedicelli 4–6 mm. longi, validi, recurvi, virides. *Perianthium* 3·3 cm. longum, subcylindricum, versus apicem leviter dilatatum, segmentis apice rotundatis vix patentibus, extra luteum, superne viridi-striatum, interioribus 3 apice brunneis. *Stamina* 1·2–1·8 cm. ultra perianthium exserta; filamentorum parte exserta atro-violacea, parte inclusa pallide lutea; antherae aurantiacae. *Stylus* exsertus, pallide luteus, apice fuscus.—*A. supralaevis, β Hanburii,* Baker in Dyer, Fl. Cap. vol. vi. p. 327; nequaquam *A. supralaevis,* Haw.—N. E. Brown.

The fine Aloe here figured was discovered by Dr. R. Marloth first at Lobatsi in Bechuanaland; later near Ladysmith in Natal; still later on the Klip River Mountains near Johannesburg in the Transvaal. Transvaal specimens flowered first under cultivation in the Grahamstown Botanic Garden in July 1908. A plant sent by Dr. Marloth in 1905 from the Klip River locality to Sir Thomas Hanbury, at La Mortola, flowered there in April 1912 and provided the material for our illustration. The species, however, had already reached Europe; the plant described by Mr. Baker

as *A. supralaevis*, β *Hanburii*, from European cultivated specimens, cannot be distinguished from that figured by Mr. Medley Wood as *A. Marlothii*, and Mr. Medley Wood's Natal plant is identical with the Transvaal one described by Mr. Berger. As Wood remarks, *A. Marlothii* had, until Berger defined it, been confused in South Africa with *A. ferox*, Mill., figured at t. 1975 of this work, and it is possible that there, as in Europe, it may have been confounded with species other than *A. ferox*, which have themselves been misunderstood. This confusion cannot be unravelled here; Mr. Berger's species is, however, a very distinct one which, while approaching *A. ferox* as regards the colour of its flowers, is in other respects more nearly allied to *A. Galpini*, Baker, in which the flowers are red.

DESCRIPTION.—*Shrub*, succulent; stem stout, simple, with a terminal rosette, over 3 ft. wide, of about 30 fleshy leaves, and clothed below with the dried remains of pendent shrivelled ones. *Leaves* close-set, $1\frac{1}{2}$–$1\frac{3}{4}$ ft. long, 6–$6\frac{1}{2}$ in. wide, ovate-lanceolate or lanceolate, acuminate, armed on the margin with conical thorns $\frac{1}{4}$–$\frac{1}{2}$ in. apart, slightly concave above, more distinctly channelled towards the tip, convex, slightly keeled below, very glaucous on both faces, above sparingly spinescent on the lower half, more closely and uniformly spinescent throughout on the back, but sometimes quite unarmed above and only sparingly spinescent on the back; thorns brown-tipped. *Peduncles* erect, over 3 ft. high, repeatedly dichotomously branched and almost candelabriform, somewhat purplish; branches almost horizontal, but again slightly recurved at the tip, over $\frac{1}{2}$ in. thick. *Flowers* secund, all directed upwards and at the same time slightly deflexed; bracts reflexed, about $\frac{1}{4}$ in. long; pedicels $\frac{1}{6}$–$\frac{1}{4}$ in. long, stout, recurved, green. *Perianth* $1\frac{1}{3}$ in. long, subcylindric, slightly dilated at the top, segments rounded and hardly spreading at the tip, yellow outside striped with green towards the top, the three inner segments with brown tips. *Stamens* projecting $\frac{1}{2}$–$\frac{3}{4}$ in. beyond the perianth; the exposed portion of the filaments dark violet, the enclosed portion pale yellow; *Style* exserted, pale yellow with a brown tip.

Figs. 1 and 2, anthers; 3, pistil:—*all enlarged.*

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J. Fowler & Co. Ipsden
M. Gauci, 1887 Ann. Bot.

Tab. 8485.

RUELLIA Harveyana.

Mexico.

Acanthaceae. Tribe Ruellieae.

Ruellia, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 1077.

Ruellia (Eu-Ruellia) **Harveyana**, *Stapf*; species nova *R. lacteae*, Cav., affinis sed sepalis magis herbaceis singulo foliaceo-ampliato, corollae tubi parte cylindrica duplo longiore, lobis haud latioribus quam longis differt.

Herba perennis, caulibus gracilioribus prostratis vel adscendentibus, apicem versus pilis patulis dense hirsutis, inferne calvescentibus, internodiis superioribus saltem superne quadrangulis, inferioribus teretibus. *Folia* petiolata, oblonga vel elliptico-oblonga, utrinque acuta vel basi breviter cuneatim attenuata, 5–8 cm. longa, 2·5–3 cm. lata, membranacea, utrinque pilis longiusculis micantibus molliter sed supra densius adpresse hirsuta; petioli graciles, 0·8–1·5 cm. longi, hirsuti. *Flores* in caulium vestigiis ex axillis foliorum sigillatim orti, sessiles. *Sepala* valde inaequalia, singulum late lanceolatum, foliaceum, ad 2 cm. longum, caetera linearisubulata vix ad 1·5 cm. longa, hirsuta vel praeter margines ciliatas subglabrescentia. *Corolla* lilacina in ore tuboque albida; tubi pars cylindrica 2 cm. longa, parte ampliata aequilonga; lobi elliptico-rotundati, subaequales, 1·5–1·7 cm. longi. *Antherae* sagittatae loculis basi acutis, 2 mm. longae. *Ovarium* glabrum; stylus 3 cm. longus, patule pilosus; stigmatis lobus inferior 2 mm. longus. *Capsula* estipitata, oblongo-lanceolata, subacuta, 1·2 cm. longa, glabra, 4-sperma. *Semina* sublenticularia, 3·5 mm. lata, pilis humefactis elastice expansis vestita.—O. Stapf.

The *Ruellia* here figured was originally discovered by Mr. J. C. Harvey in forests on the northern or Atlantic side of the Isthmus of Tehuantepec in 1904. In 1911 Mr. Harvey sent to Kew, from his garden at Sanborn, Vera Cruz, a living plant which flowered in August 1912 and provided the material for our plate. In a warm house, under the conditions suitable for Begonias and Gesneriads, *R. Harveyana* has grown freely and formed a trailing shrub of somewhat straggling habit. In its native forests, Mr. Harvey informs us, its flowers, though usually coloured as in our plate, are sometimes white. *R. Harveyana* belongs to a group of species of *Ruellia* where there is much confusion. Among these it approaches most closely that usually known as *R. lactea*, Cav., described and figured by Cavanilles in 1794 from a Mexican plant growing in the Madrid garden, stated to have corollas of a blue so diluted that they might almost

be said to be white; its sepals are said to be subequal and subulate with awn-like points, so that the plant, whatever it may be, is not *R. Harveyana.* According to Loudon, a plant introduced by the Marquis of Bute in 1796 was accepted as Cavanilles' plant, and early in the nineteenth century was in cultivation at Kew, Paris and Berlin under Cavanilles' name. Its identity is vouched for by a specimen, collected by Gay in the Jardin des Plantes in 1817, now in the herbarium at Kew. This plant was accepted by Nees as *R. lactea,* Cav., and described by him as *Cryphiacanthus lacteus.* It agrees fairly well with wild specimens collected by Andrieux between Acatlán and Chila in lower western Puebla. No specimens of Cavanilles' original plant appear to exist, and it is impossible to say whether the differences between *R. lactea,* Cav., and the plant of Nees be due to faulty delineation or to natural variation. The point that is of consequence is that if the characters given by Cavanilles exclude *R. Harveyana* from *R. lactea,* those of the specimens accepted as *R. lactea* make the recognition of our plant equally necessary.

Description.—*Herb,* perennial; stems rather slender, trailing or ascending, densely hairy near the top, almost glabrous lower down, upper internodes 4-angled above, the lower cylindric. *Leaves* petioled, oblong or elliptic-oblong, acute, base narrow-cuneate, 2–3 in. long, 1–1$\frac{1}{4}$ in. wide, membranous, softly pubescent, especially above, with longish glistening hairs; petioles slender, $\frac{1}{3}$–$\frac{2}{3}$ in. long, hairy. *Flowers* produced one at a time in the upper axils, sessile. *Sepals* very unequal, 4 linear-subulate, $\frac{2}{3}$ in. long, the fifth wide-lanceolate, leafy, $\frac{3}{4}$ in. long; all hirsute or nearly glabrous but with ciliate edges. *Corolla* pale lilac with white throat and tube; cylindric base of tube $\frac{3}{4}$ in. long, as long as the widened upper part; lobes elliptic-rounded, subequal, $\frac{2}{3}$–$\frac{3}{4}$ in. long. *Anthers* sagittate, with locules acute below, 1 lin. long. *Ovary* glabrous; style 1$\frac{1}{4}$ in. long, pilose with spreading hairs; lower stigmatic lobe 1 lin. long. *Capsule* not stipitate, oblong-lanceolate, subacute, $\frac{1}{2}$ in. long, 4-seeded. *Seeds* sublenticular, $\frac{1}{7}$ in. across, clothed with hairs that spread elastically when wet.

Fig. 1, calyx and pistil; 2, part of corolla-tube, showing staminal insertion, laid open; 3 and 4, anthers; 5, ovary:—*all enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d imp

L. Reeve & Co. London.

Tab. 8486.

PRUNUS pennsylvanica.

North America.

Rosaceae. Tribe Pruneae.

Prunus, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 610.

Prunus (Cerasus) **pennsylvanica,** *Linn. f. Suppl.* p. 252; *Sargent, Silva of N. Amer.* vol. iv. t. 156; *C. K. Schneider, Laubholzk.* vol. i. p. 618; species *P. emarginatae,* Walp., proxime affinis sed foliis glabrescentibus saepe ovatis semper acuminatis haud obovatis obtusis, fructu minore laete rubro differt.

Arbor decidua, 9–12-metralis, truncus 4·5 dm. diametro; ramuli glabri, rubidi; cortex amarissima. *Folia* petiolata, ovata vel ovato-lanceolata, raro obovata, acuminata, basi rotundata vel late cuneata, margine minute irregulariter serrata, dentibus incurvis apice glandulosis, 7·5–10 cm. longa, 2·5–4 cm. lata, laete viridia, primum puberula, cito glabra; petiolus gracilis, 1·2–2 cm. longus versus apicem 1–3-glandulosus; stipulae minutae, margine glandulosae. *Flores* albi, sub vere aperti, 1·2 cm. lati, in vestigiis annotinis fasciculatim vel subumbellatim congesti, glomeruli 4–6- raro pluri-flori; pedicelli graciles, glabri, 2–2·5 cm. longi. *Calyx* glaber, 5-lobus; tubus infundibuliformis; lobi obtusi, tubo subaequilongi. *Petala* 5, subrotundata, extra versus basin pubescentia. *Fructus* globosus, 6 mm. diametiens, maturitate laete ruber; endocarpium compressum, ovoideum.—*Cerasus borealis,* Mich. Fl. Bor. Amer. vol. i. p. 286. *C. persicifolia,* Loisel. in Nouv. Duham. vol. v. p. 9.—W. J. Bean.

Though introduced, according to Aiton, in 1773, the Cherry which forms the subject of our illustration has never been common in this country. As long after its introduction as 1842, it appears to have been unknown, in the living state, to Loudon. It is nevertheless a handsome, free-flowering species, as is shown by our plate, prepared from material gathered from a small tree presented to Kew by the Arnold Arboretum in 1910. It is worthy of a place in thin woodland where our native *P. avium* and *P. Padus* succeed. One of the most widely spread of North American trees, *P. pennsylvanica* extends from Newfoundland and the shores of Hudson's Bay in the north, to North Carolina and Tennessee in the south, and westward to the inland slopes of the Rocky Mountains. Its nearest ally is *P. emarginata,* Walp., another red-fruited Cherry, which is, however, a purely western species, confined to the area from California to British Columbia, and is distinguished from the species

now figured by its obovate, mostly obtuse and more or less pubescent leaves, as well as by its larger and darker red fruit.

DESCRIPTION.—*Tree*, 30–40 ft. high, deciduous; stem 1½ ft. thick; twigs glabrous, reddish; bark intensely bitter. *Leaves* petioled, ovate or ovate-lanceolate, sometimes obovate, acuminate, rounded or broadly cuneate at the base, finely but irregularly serrate, the teeth much incurved and gland-tipped, 3–4 in. long, 1–1¾ in. wide, bright green, glabrous except when just unfolding; petiole slender, ½–¾ in. long, with one or more glands near its junction with the blade; stipules very small, subulate, with glandular edges. *Flowers* white, ½ in. across, opening during April or early May on the growths of the previous year, in fascicles or short-stemmed umbels bearing 4–6, sometimes more flowers; pedicels slender, glabrous, ¾–1 in. long. *Calyx* glabrous, 5-lobed; tube funnel-shaped; lobes blunt, about as long as the tube. *Petals* 5, suborbicular, pubescent outside near the base. *Fruit* subglobose, ¼ in. across, bright red when ripe; stone compressed, ovoid.

Fig. 1, portion of edge of a leaf; 2, stipules; 3, flower-bud; 4, vertical section of a flower, the petals removed:—*all enlarged.*

1

2

3

M.S.del. J.N.Stenhith.

Vincent Brooks, Day & Son Lith. Imp.

Tab. 8487.

SANSEVIERIA aethiopica.

South Africa.

Liliaceae. Tribe Dracaeneae.

Sansevieria, *Thunb.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 679.

Sansevieria aethiopica, *Thunb. Prodr. Pl. Cap.* p. 65; *Nov. Gen.* p. 127, *et Fl. Cap. ed. Schultes,* p. 329; *Schultes, Syst. Veg.* vol. vii. p. 358; *Kunth, Enum. Plant.* vol. v. p. 19; affinis *S. zeylanicae*, Willd., sed foliis numerosioribus brevioribus haud subcylindricis et multo tenuioribus facile distinguitur.

Suffrutex succulentus, acaulis. *Folia* 13–30, subrosulata, suberecta vel erecto-patula, 12–40 cm. longa, 1–1·5 cm. lata, 3–6 mm. crassa, lineari-lanceolata, acuta, in subulas 2–3 cm. longas albidas excurrentia, concavo-canaliculata, dorso valde convexa, atroviridia, interdum transverse zonata, subglauca, rubro- vel albido-marginata. *Inflorescentia* 40–75 cm. alta, inferne vaginis 5–7 acuminatis membranaceis 2–7 cm. longis instructa, superne spicato-racemosa, floribus fasciculatis; fasciculi 4–6-flori. *Bracteae* membranaceae, patulae vel reflexae, 5–12 mm. longae, ovato-lanceolatae, acutae. *Pedicelli* 4–8 mm. longi, supra medium articulati. *Perianthium* album; tubus 1·8–2·5 cm. longus, basi leviter inflatus; lobi 1·7–2 cm. longi, 2 mm. lati, subspathulato-lineari, revoluti. *Stamina* longe exserta. *Stylus* staminibus longior; stigma minute capitata.—*S. zeylanica*, Red. Lil. vol. v. t. 290; Lindl. Bot. Reg. vol. ii. t. 160; Baker in Fl. Cap. vol. vi. p. 5, syn. exclus.; non Willd.—N. E. Brown.

The systematic position of the genus *Sansevieria*, Thunb., familiar and economically interesting as that which includes the plants yielding the fibre known as Bowstring Hemp, has been a subject of difficulty and debate. Transferred, for what at the time appeared to be valid reasons, by the authors of the "Genera Plantarum" in 1883 from *Liliaceae* to *Haemodoraceae*, it has recently, as the outcome of renewed investigation, been replaced in *Liliaceae* next to the genus *Dracaena*, Vand. The species which forms the subject of our plate, *S. aethiopica*, is one of those upon which Thunberg founded the genus, and has been in cultivation in Europe for over a century, yet it has never, so far, been figured under its own proper name. This has been due to its having been mistaken for *S. zeylanica*, Willd., a plant till recently very imperfectly known, but one which, now that wild specimens have been obtained for the Kew collection from Ceylon, is found to be altogether distinct from the

subject of our illustration, which has leaves that are more numerous to a growth, and are much shorter and thinner, with a whitish in place of a green tip and red or whitish margins. In *S. aethiopica*, too, the flowers are larger than they are in *S. zeylanica*. The plant which has supplied the material for our figure was transmitted to Kew in 1895 by Mr. C. Howlett, Curator of the Botanic Garden at Graaf Reinet, and was collected by him in the Uitenhage division of Cape Colony. From Uitenhage it extends inland to Griqualand West, the Transvaal and Rhodesia, but without passing eastwards as far as Natal or westwards to Namaqualand. Grown in a warm greenhouse *S. aethiopica* thrives well and flowers at intervals; the flowers figured were produced in July 1909. Like other species of the genus, *S. aethiopica* is easily propagated, either by division of the rootstock or from sections of the leaf, which strike readily when placed in sandy soil in a warm house and soon form a basal growth bud.

DESCRIPTION.—*Undershrub*, succulent, stemless. *Leaves* 13–30, somewhat tufted, suberect or somewhat spreading, 5–16 in. long, $\frac{1}{3}$–$\frac{2}{3}$ in. wide, $\frac{1}{8}$–$\frac{1}{4}$ in. thick, linear-lanceolate, acute and ending in white tips $\frac{3}{4}$–$1\frac{1}{4}$ in. long, concavely channelled, very convex on the back, dark green but at times transversely banded, somewhat glaucous, with reddish or white edges. *Inflorescence* 16–30 in. long, with 5–7 acuminate, membranous sheaths each $\frac{3}{4}$–$2\frac{3}{4}$ in. long near the base, the upper half spicately racemose; bracts membranous, spreading or reflexed, $\frac{1}{5}$–$\frac{1}{2}$ in. long, ovate-lanceolate, acute, each subtending 4–6 flowers with pedicels $\frac{1}{6}$–$\frac{1}{3}$ in. long, jointed above the middle. *Perianth* white, tube $\frac{2}{3}$–1 in. long, slightly swollen at the base; lobes $\frac{2}{3}$–$\frac{3}{4}$ in. long, 1 lin. wide, subspathulate linear, revolute. *Stamens* far exserted. *Style* longer than the stamens; stigma very small, capitate.

Fig. 1, a flower; 2 and 3, anthers; 4, an entire plant:—*all enlarged except* 4, *which is much reduced.*

M.S.del.J.N.Fitch lith.

Vincent Brooks, Day & Son Lt.d imp.

L. Reeve & Co. London

TAB. 8488.

PYRUS IOENSIS.

Central United States.

ROSACEAE. Tribe POMEAE.

PYRUS, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 626.

Pyrus ioensis, *L. H. Bailey in Amer. Gard.* vol. xii. p. 473; species *P. coronariae,* Linn., et *P. angustifoliae,* Ait., arcte affinis, ab ambabus foliis persistenter tomentosis facile distinguenda.

Arbor decidua, 6–9-metralis; truncus 3–4·5 dm. crassus; coma laxiuscula; ramuli graciliores nonnunquam in spinas abeuntes, primum dense lanati demum glabrati. *Folia* petiolata, ovato-rhomboidea vel ovata, acuta, basi cuneata, margine grosse irregulariter saepe duplicato-serrata, ramulorum sterilium hornotinorum saepissime prope basin distincte lobata, 7·5–12·5 cm. longa, 5–9 cm. lata, ramulorum hornotinorum floriferorum vix lobata, 5–7·5 cm. longa, 3–5 cm. lata, supra saturate viridia, nisi tomento caducissimo glabra, subtus primum dense demum laxe persistenter tomentosa; petiolus 1·25–3·5 cm. longus; stipulae subulatae. *Flores* violam olentes in corymbos 4–7-floros dispositi; singuli 4–5 cm. lati, longe pedunculati; pedunculi 3–4 cm. longi, floccosi. *Calyx* extra dense albo-tomentosus; lobi 6 mm. longi, subulati. *Petala* concava, obovata, unguiculata, unguis 3 mm. longus. *Stamina* numerosa; filamenta glabra; antherae luteae. *Ovarium* styloque floccosum. *Fructus* fragrans, luteo-brunneus, depresse globosus, 2·5–3 cm. latus, calyce persistente coronatus; carnes duriusculi peracerbi.—*P. coronaria,* var. *ioensis,* Wood ex Sargent in Silva of N. Amer. t. 167. *Malus ioensis,* Britton & Brown in Ill. Fl. Nor. U. S. vol. ii. p. 235; Sargent in Trees of N. Amer. p. 354, fig. 278. *M. coronarius,* var. *ioensis,* C. K. Schneider, Ill. Handb.. Laubholzk. vol. i. p. 724.—W. J. BEAN.

The American Crab here figured is one of a well-marked group of three distinguished, in the *Malus* group of the genus *Pyrus,* in flowering latest of all and in having violet-scented flowers. The better known of the other two is *Pyrus coronaria,* Linn., a species figured at t. 2009 of this work, which is distinguished by having its leaves truncate or slightly cordate and by having them, when mature, nearly or quite glabrous. The other species, *P. angustifolia,* Ait., also differs in having its leaves glabrous at maturity and is very readily distinguished in having fruits that are less than an inch in diameter. It is, besides, a Southern species which reaches Florida, whereas *P. ioensis* has its own well-defined area west of the Alleghanies; it is described as being the common Crab of the Mississippi basin. As a tree for gardens *P. ioensis* is strongly to be recommended,

especially for the fragrance of its blossom, which is borne in late May and early June. There is a double-flowered variety, more generally met with in gardens than *P. ivensis* itself, which is erroneously termed sometimes *P. angustifolia, flore pleno*, sometimes *P. coronaria, flore pleno*; its flowers are 2–3 inches across. So far as is known the true *P. angustifolia*, which was grown in English gardens a century and a half ago, is not now in cultivation in this country.

DESCRIPTION.—*Tree*, deciduous, 20–30 ft. high; trunk 1–1½ ft. in diameter; crown rather loose and open; twigs slender, sometimes spine-tipped, at first covered with a soft white wool which turns brown and falls almost entirely away by winter. *Leaves* petioled, ovate-rhomboid or ovate, acute, base cuneate, margin coarsely irregularly often double toothed, on the virgin shoots of the year 3–5 in. long, 2–3½ in. wide, with frequently one or two pairs of lanceolate lobes near the base divided halfway to the midrib, on the flowering twigs 2–3 in. long, 1¼–2 in. wide, scarcely lobed; all dark green above and glabrous except for a loose tomentum at first opening, very tomentose beneath when young and remaining more or less persistently hairy till they fall; petiole ½–1½ in. long; stipules subulate. *Flowers* violet-scented, 1¾–2 in. across, in 4–7-flowered corymbs; peduncles 1¼–1¾ in. long, floccose. *Calyx* densely white-tomentose outside; lobes ¼ in. long, subulate. *Petals* concave, obovate, narrowed to a claw ⅛ in. long. *Stamens* numerous; filaments glabrous; anthers yellow. *Ovary* and style floccose. *Fruit* fragrant, yellowish-brown, depressed globose, 1–1¼ in. wide, crowned by the persistent calyx; flesh hard and very astringent.

Fig. 1, vertical section of a flower, the petals removed; 2 and 3, stamens:—*all enlarged.*

B

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A

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C

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Ltd. imp

L. Reeve & Co. London.

Tab. 8489.

COCCULUS trilobus.

Eastern Asia.

MENISPERMACEAE. Tribe COCCULEAE.

COCCULUS, *DC.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 36.

Cocculus trilobus, *DC. Syst. Veg.* vol. i. p. 522; *Diels in Engl. Pflanzenr. Menispermac.* p. 232; a *C. molli,* Wall., sepalis glabris distinguitur.

Frutex scandens. *Rami* volubiles, in vivo vix striatuli, in sicco striati, molliter pilosi. *Folia* ovata (interdum triloba lobo medio lateralibus multo majore), apice obtusa vel acuta, apiculata, basi rotundata vel cordata, 5–9 cm. longa, 3·3–7 cm. lata, firme herbacea, basi palmatim 5-nervia, crebre reticulata praesertim in sicco, supra puberula subtus plus minusve pubescentia; petioli 1·5–3·5 cm. longi, molliter pilosi. *Cymae* unisexuales, singulae in axillis foliorum, vel in thyrsum terminalem bracteatum aggregatae; bracteolae 2, basi calycis insertae, ovato-oblongae, vix ad 1 mm. longae. *Flores* ♂ : *Sepala* 6; 3 exteriora ovata, vix 2 mm. longa, 1–1·5 mm. lata; 3 interiora late ovata, 3 mm. longa, 2·5 mm. lata. *Petala* 6, ligularia, 3 mm. longa, apice bifida lobis subulatis 0·5 mm. longis interdum iterum bifidis, marginibus inferne inflexis. *Stamina* 6, petalis opposita; filamenta superne incurva, antheras horizontaliter gerentia; antherae 4-lobatae. *Flores* ♀: *Sepala* iis maris similia at breviora. *Petala* elliptico-oblonga, 1·7 mm. longa, 0·8 mm. lata, bifida lobis divergentibus. *Staminodia* minuta, 6 vel pauciora, singula inter carpella, interdum nulla. *Ovaria* 6, stylis recurvis; ovulum unicum, suturae ventrali affixum. *Drupae* 2–4 pro flore, subglobosae, circiter 7 mm. diametro, fere nigrae, pruinosae, stylo adpresso ventraliter basin versus sito; mesocarpium viride; endocarpium osseum, reniforme, sinu parvula ventrali; intus in condylum magnum centralem productum; condylus extra utrinque in cavum auriformem excavatus; endocarpii pars peripheralis transverse corrugata. *Semen* valde curvatum. *Embryo* albumine copioso inclusa; cotyledones incumbentes.—*C. Thunbergii,* DC. Syst. vol. i. p. 524. *C. cynanchoides,* Presl. Rel. Haenk. vol. ii. p. 79. *Menispermum trilobum,* Thunb. Fl. Jap. p. 194. *M. orbiculatum,* Thunb. l.c., non Linn. *Cebatha orbiculata,* Kuntze, Rev. Gen. vol. i. p. 9; C. K. Schneider, Ill. Handb. Laubholzk. vol. i. p. 327.—T. A. SPRAGUE.

The *Cocculus* here figured is a scandent shrub, native of Eastern Asia, where it extends from Japan and Northern China to the Philippines. The leaves are variable in outline, and the form of *C. trilobus* with entire leaves, here depicted, is often known as *C. Thunbergii,* DC. Like other species of the genus, *C. trilobus* is easily cultivated and propagated, but to get it to fruit freely it needs all the sunshine possible. The flowers figured were produced in 1912,

but the fruits shown were gathered in November 1911, and it was no doubt owing to the great heat of that year that the crop was so fine. Even in ordinary seasons, however, the plant is well worthy of cultivation; grown up stout limbs of oak set in the ground it makes an elegant climber, twining itself tightly round the smaller branches. This *Cocculus* was introduced to cultivation from Japan by Professor Sargent, Arnold Arboretum, some twenty years ago. It is perfectly hardy.

DESCRIPTION.—*Shrub*, climbing; branches twining, softly hairy. *Leaves* petioled, ovate entire or at times 3-lobed with the mid-lobe much larger than the side lobes, obtuse or acute, apiculate, base rounded or cordate, 2–3¾ in. long, 1¼–2¾ in. wide, firmly herbaceous, palmately 5-nerved at the base, closely reticulate, puberulous above, more or less pubescent beneath; petiole ⅔–1⅓ in. long, soft hairy. *Cymes* 1-sexual, solitary in the leaf axils or aggregated in a terminal bracteate thyrse; bracteoles paired, close to the base of the calyx, ovate oblong, very small. *Male*: *Sepals* 6, the outer 3 ovate, under 1 lin. long, the inner 3 wide ovate, 1½ lin. long. *Petals* 6, ligulate, 1½ lin. long, 2-fid at the tip, the lobules subulate sometimes a second time 2-fid, their margins inflexed below. *Stamens* 6, opposite the petals; filaments incurved above; anthers horizontal, 4-lobed. *Female*: *Sepals* as in male flowers, but shorter. *Petals* elliptic oblong, 2-fid with divergent lobes. *Staminodes* 6 or fewer, very small; sometimes obsolete. *Carpels* 6, styles recurved; ovule in each carpel solitary, placentation ventral. *Drupes* 2–4 to each flower, subglobose, about ¼ in. across, blue-black, pruinose, style adpressed, subbasal, ventral; mesocarp green; endocarp hard, reniform with a small ventral sinus, prolonged into a large central condyle hollowed on each side into an auriculate cavity; peripheral portion of the endocarp transversely ridged. *Seed* much curved; albumen copious; cotyledons incumbent.

Fig. A, male inflorescence; B, female inflorescence; C, branch with fruits; 1, section of male flower; 2, stamen; 3, section of female flower; 4, staminode; 5, fruit; 6, endocarp, seen from one side; 7, section of endocarp and seed, showing albumen and embryo; 8, embryo:—*the lettered figures of natural size, the others enlarged.*

M.S. del. J.N. Fitch lith

Day & Son Lt.d imp

Tab. 8490.

Cistus Loreti ×.

Garden Origin.

Cistaceae.

Cistus, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 113.

Cistus Loreti, *Rouy & Fouc. Fl. France,* vol. ii. p. 279; stirps hybrida foliis *C. monspeliensis,* Linn., floribus *C. ladaniferi,* Linn.

Frutex metralis, erectus, viscidulus. *Rami* pallide brunnei. *Folia* opposita, patula, sessilia, basi breviter connata, lanceolata vel lanceolato-oblonga, apice obtusa vel rotundata, in basin angustata, 3–5·5 cm. longa, 1–1·8 cm. lata, trinervia, supra atro-viridia, glabriuscula, impresso-reticulata, subtus pallidiora, parciuscule minute stellato-pilosa, nervis venulisque prominentibus; folia ramulorum floriferorum elliptico-oblonga, circiter 3 cm. longa, 1·2 cm. lata, supra inferne inconspicue appresse pilosa, superne glabriuscula, subtus minute stellato-pilosa. *Inflorescentiae* umbelliformes, 3–4-florae, bracteatae, ramulos terminantes; bracteae ovatae, acutae, circiter 1·5 cm. longae, 1·1 cm. latae, supra subsericeae, subtus stellato-pubescentes nervo medio parce longe piloso. *Sepala* 5 (rarius 6 vel 4), valde imbricata, inferne connata, late ovata, 1·2–1·4 cm. longa, extra stellato-pubescentia, intus marginibus exterioribus appresse villosa. *Petala* 5, fugacia, latissime obovata, 3 cm. diametro, alba, macula basali lutea 6 mm. diametro, alteraque supra-basali atro-sanguinea 5 mm. diametro. *Stamina* numerosa; filamenta filiformia, superne leviter ampliata, circiter 6 mm. longa; antherae oblongae, 0·8–1·3 mm. longae, loculis apice approximatis deorsum divergentibus. *Ovarium* subglobosum, minute dense pilosum, 3 mm. diametro, imperfecte 5–6-loculare, ovalis pro loculo numerosis; stylus subnullus (0·2 mm. longus), stigmate discoideo 2·5 mm. diametro omnino occultus.—*Cistus monspeliensi-ladaniferus,* Loret in Rev. Sc. Nat. vol. iii. p. 364; Loret & Barrandon, Fl. Montpellier, vol. i. p. 67. *C. ladaniferus* × *monspeliensis,* Grosser in Eng. Pflanzenr. Cistac. p. 28.—T. A. Sprague.

The Rock Rose which forms the subject of our figure is one which has been grown in the Kew collection for a quarter of a century, but having been received under another name and having since its receipt been several times propagated its origin is not known. That it is a natural hybrid between *Cistus ladaniferus,* Linn., figured long ago at t. 112 of this work, and *C. monspeliensis,* Linn., has long been believed, for it has been met with in a wild state in Hérault growing along with the two parent species. The belief has been confirmed by the late Mr. Bornet, who obtained *C. Loreti* experimentally by crossing these two species. The special interest of this Rock Rose to cultivators lies, however, in the fact that it is one of the hardiest in the genus; it has withstood at Kew without injury.

April, 1913.

over twenty degrees of frost, and there are but few species of *Cistus* of which this can be said. It is also undoubtedly one of the most beautiful of the Rock Roses, flowering very profusely and making a striking display for several weeks from Midsummer onwards. Messrs. Rouy and Foucaud recognise two distinct forms, both of which have been met with in a wild state; the first, *albiflorus*, has petals with no crimson spot near the base; the second, *maculatus*, which is that now figured, has petals with a crimson spot. *C. Loreti* is easily increased by cuttings made of late summer shoots. Owing to its dislike of root disturbance it should be grown in pots until planted out permanently. A light sandy soil and the sunniest situation available should be given to it.

DESCRIPTION.—*Shrub*, 4 ft. high, erect, somewhat viscid; branches pale brown. *Leaves* opposite, spreading, sessile, slightly connate at the base, lanceolate or oblong-lanceolate, apex obtuse or rounded, narrowed to the base, $1\frac{1}{4}$–$2\frac{1}{4}$ in. long, $\frac{1}{3}$–$\frac{2}{3}$ in. wide, 3-nerved, dark green above, almost glabrous, with impressed venation, paler beneath, sparingly finely stellate hairy, with raised venation; leaves of the flowering shoots elliptic-oblong, about $1\frac{1}{4}$ in. long, $\frac{1}{2}$ in. wide, above slightly stellate near the base, almost glabrous nearer the apex, beneath finely stellate-hairy. *Inflorescence* umbellate, 3–4-flowered, bracteate, at the ends of the twigs; bracts ovate, acute, about $\frac{2}{3}$ in. long, nearly $\frac{1}{2}$ in. across, almost silky above, stellate-pubescent and along the midrib sparingly beset with long hairs below. *Sepals* 5, rarely 6 or 4, much imbricate, connate below, wide ovate, $\frac{1}{2}$ in. long or longer, stellate-pubescent outside, adpressed villous on the outer edges within. *Petals* 5, fugacious, very wide obovate, $1\frac{1}{4}$ in. across, white, with a yellow basal spot $\frac{1}{4}$ in. wide and just above this a dark red spot $\frac{1}{5}$ in. wide. *Stamens* many; filaments filiform, slightly widened upwards, about $\frac{1}{4}$ in. long; anthers oblong, small, locelli diverging downwards. *Ovary* subglobose, finely closely pilose, $\frac{1}{8}$ in. across, incompletely 5–6-celled; ovules many in each cell; style very short; stigma discoid.

Figs. 1 and 2, stamens; 3, pistil; 4, transverse section of the ovary:—*all enlarged.*

M.S. del J.N. Fitch lith.

Vincent Brooks, Day & Son. Lith.

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Tab. 8491.

Hypericum Kalmianum.

North America.

Hypericaceae. Tribe Hypericeae.

Hypericum, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 165.

Hypericum Kalmianum, *Linn. Sp. Pl.* p. 783; *Torr. Fl. New York*, vol. i. p. 86, t. 13; *Torr. & Gray, Fl. N. Am.* vol. i. p. 158; *Coulter in A. Gray, Syn. Fl. N. Am.* vol. i. pars 1, p. 285; *Britton & Brown, Ill. Fl. Nor. U. S.* vol. ii. p. 430; *Britton, Man. Fl. U. States & Canada*, p. 626; stylis 5 primum arcte adpressis tandem divergentibus, stigmatibus minutis ab affinibus facile distinguitur.

Frutex multiramosus, 3–6 dm. altus, cortice brunneo delaminante. *Rami* quadranguli; ramuli subcompressi, leviter bialati. *Folia* sessilia, patentia, lineari-oblanceolata, apice obtusa, in basin sensim angustata, 2–5 cm. longa, 3–8 mm. lata, tenuiter coriacea, pellucide punctata, marginibus recurvis, supra nervo medio impresso, subtus glaucescentia nervo medio prominente. *Cymae* dichasiales, 7–15-florae, ramulos terminantes; pedicelli 4–10 mm. longi. *Flores* 2 cm. diametro. *Sepala* foliacea, oblonga, subacuta, circiter 5 mm. longa, circiter 2 mm. lata, pellucide punctata. *Petala* lutea, deflexa, oblique obovata, vix ultra 1 cm. longa, 6·5 mm. lata, indistincte pellucide punctata. *Stamina* numerosissima, libera, aurantiaca, 6–7 mm. longa. *Ovarium* 5-lobum, 5-loculare, ovulis numerosis; styli 5, primum inter se arcte adpressi, demum divergentes; stigmata punctiformia. *Capsula* ovoidea, 6 mm. longa, 5-locularis.—T. A. Sprague.

The true *Hypericum Kalmianum*, Linn., here figured, which was originally introduced in 1759, has of late years been almost or quite lost to gardens in this country, the plant grown under the name being nearly always *H. prolificum*, Linn., also a North American species. *H. Kalmianum* is a native of the Great Lake region of North-Eastern America and extends from Ontario and Western New York to Illinois, Wisconsin and Michigan. The best-known habitat of the shrub is on the banks of the Niagara Gorge, but it is now uncommon in nature as well as in gardens. For its reintroduction Kew is indebted to Mr. J. Dunbar, Assistant Superintendent of the Rochester Parks, N.Y., an eager and accomplished student of the North American flora. In sending seeds in March 1911, Mr. Dunbar remarked that the plants from which they were collected "were found at Rose Hill, Ontario, Canada, on the opposite side of Lake Erie from Buffalo, growing in great abundance on the bleak

sandy coast-line." The plants raised from these seeds flowered in August 1912, and from one of them our figure was prepared. A characteristic appearance is given to this species by the presence of axillary tufts of leaves on the shoots of the current year. These tufts, which are usually composed of two pairs of leaves, are borne on greatly abbreviated "short-shoots." *H. Kalmianum* thrives very well with other St. John's Worts in good loamy soil, and is easily increased by cuttings as well as by seeds.

DESCRIPTION.—Shrub, much branched, 1–2 ft. high, bark brown, flaking; branches 4-angled, twigs somewhat compressed, slightly 2-winged. *Leaves* sessile, spreading, linear-oblanceolate, obtuse, gradually narrowed to the base, $\frac{3}{4}$–2 in. long, $\frac{1}{8}$–$\frac{1}{3}$ in. wide, thinly coriaceous, transparent-dotted, margins recurved, the main-nerve sunk above, glaucescent beneath with the main-nerve raised. *Cymes* dichasial 7–15-flowered, at the ends of the twigs; pedicels $\frac{1}{6}$–$\frac{2}{5}$ in. long. *Flowers* $\frac{3}{4}$ in. across. *Sepals* leafy, oblong, subacute, about $\frac{1}{5}$ in. long, 1 lin. wide, transparent-dotted. *Petals* yellow, deflexed, obliquely obovate, under $\frac{1}{2}$ in. long, $\frac{1}{4}$ in. wide, faintly transparent-dotted. *Stamens* very many, free, orange-yellow, $\frac{1}{4}$ in. long. *Ovary* 5-lobed, 5-celled; ovules many; styles 5, at first closely adpressed, at length diverging; stigmas minute. *Capsule* ovoid, 5-celled, $\frac{1}{4}$ in. long.

Fig. 1, calyx and pistil; 2 and 3, anthers:—*all enlarged.*

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THE

COLEOPTERA

OF

THE BRITISH ISLANDS

A DESCRIPTIVE ACCOUNT OF THE FAMILIES, GENERA AND SPECIES INDIGENOUS TO GREAT BRITAIN AND IRELAND WITH NOTES AS TO LOCALITIES, HABITATS, ETC.

BY

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PRESIDENT OF THE ENTOMOLOGICAL SOCIETY OF LONDON 1901-2

AND

HORACE ST. JOHN DONISTHORPE, F.Z.S., F.E.S.

VICE-PRESIDENT OF THE ENTOMOLOGICAL SOCIETY OF LONDON 1911

VOL. VI (SUPPLEMENT)

INCLUDING A PAPER ON THE MYRMECOPHILOUS COLEOPTERA OF GREAT BRITAIN

LONDON

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6 HENRIETTA STREET, COVENT GARDEN

1913

AUTHOR'S PREFACE

TO THE SIXTH (SUPPLEMENTARY) VOLUME

The last volume of the "Coleoptera of the British Islands" was published in 1891. In the preface to the first volume I expressed a hope that the work might, at all events, prove of some help towards encouraging the study of our native Coleoptera. As far as I can gather, this hope has been, in a measure at least, realised, and to judge by the results, as embodied in this volume, it will be seen that a great deal of work has been done at the Order during the past twenty years. Moreover, that work is by no means exhausted. Almost every month new species are being recorded. The present volume was practically ready some months ago, except for the plates, and the large list of addenda that has accumulated during that period shows the interest that is being taken in our Coleoptera at the present time. Dr. Sharp is of opinion that our indigenous species will be found in the future to number at least 4000, and this makes it evident that there may be much left to discover.

When it appeared that there was need of a supplement to bring the work up to date, Mr. Donisthorpe, hearing of my intention to prepare one, kindly offered me the use of the list of localities, etc., which he had for some years compiled from various records. I therefore asked him if he would collaborate with me, and I am much indebted to him for his help. The first part of the work is, for the most part, mine, and I hold myself responsible for it; while Mr. Donisthorpe has provided the part relating to fresh localities, and the excellent paper on the British Myrmecophilous Coleoptera, and has also undertaken the arrangement of the plates.

W. W. FOWLER

January 10, 1913

PUBLISHERS' NOTE

"THE COLEOPTERA OF THE BRITISH ISLANDS" was originally published in five volumes between 1887 and 1891. It was intended to provide a short account of our indigenous Coleoptera, with some reference to their localities and habits, and, where possible, to their life history; subsequently it was increased in scope. The work is one of great importance and value to all Coleopterists, and a valuable addition to the present list of entomological works. The large paper edition of the first five volumes, containing 180 plates, carefully drawn and coloured, and representing upwards of 2300 species, is almost out of print.

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Tab. 8492.

RHODODENDRON Wightii.

Sikkim Himalaya.

Ericaceae. Tribe Rhodoreae.

Rhododendron, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron Wightii, *Hook. f. Rhod. Sikkim Himalaya,* p. 30, t. xxvii.; *C. B. Clarke in Hook. f. Fl. Brit. Ind.* vol. iii. p. 467; *Watson in Gard. Chron.* 1911, vol. l. p. 268, fig. 121; *Smith in Rec. Bot. Surv. Ind.* vol. v. p. 216; a *R. campylocarpo,* Hook. f., foliis majoribus basi angustioribus facile distinguendum.

Arbuscula ramulis satis crassis primo plus minusve lanatis mox glabris brunneo-corticatis. *Folia* lanceolata, elliptico-lanceolata vel fere elliptico-oblonga, apice obtusa vel subacuta, mucronata, basi valde vel vix inaequilatera, cuneata vel late cuneata vel latere altero rotundata altero cuneata, 8·5–20 cm. longa, 3·5–8 cm. lata, coriacea, supra glabra, viridia, subtus costa mox glabra excepta arcte adpresse cinnamomeo-lanata, costa supra impressa subtus valde prominente, nervis lateralibus utrinque circiter 12 pagina superiore impressis inferiore prominentibus nervulis supra parum immersis, margine parum revoluta; petiolus satis crassus, 1·2–4 cm. longus. *Inflorescentia* terminalis, multiflora, laxe capitata; bracteae anguste oblongae, acute acuminatae, ad 4·3 cm. longae et 1 cm. latae, sericeae; pedicelli plerumque circiter 3 cm. longi, mox glabri, apicem versus sub anthesin plus minusve cernui. *Calycis* lobi parvi, glandulosi. *Corolla* campanulata, circiter 4·2 cm. longa, straminea, sanguineo-notata; lobi 5, limbo circiter dimidio breviores, patente-recurvi, imbricati, emarginati. *Stamina* 10, filamentis ad 2·9 cm. longis inferne breviter pilosis, antheris subpurpureis 3·5 mm. longis. *Ovarium* dense lanatum, 10-loculare; stylus corollae subaequilongus, glaber, stigmate capitato.—W. G. Craib.

The handsome Himalayan Rhododendron which forms the subject of our illustration, though it has long been in cultivation in this country, does not appear ever to have been common in collections. In certain parts of Sikkim it seems to be plentiful, and in his original description Sir J. D. Hooker speaks of the species as abundant in the wooded valleys and on the spurs of all the mountains at an elevation of 12–14,000 feet above sea-level. It is not, however, abundant in all the valleys of Sikkim at this elevation, though it probably is so in most of those explored by Hooker, and as regards the valley of the Zemu, a tributary of the Tista, Hooker's account is fully confirmed by recent travellers. The figure here given was prepared from a

plant which flowered in the Himalayan house at Kew in April, 1911. It was raised from a graft presented by Miss A. Mangles, in whose garden at Littleworth there is a large bushy specimen of *R. Wightii* which has long been grown in the open. It flowers freely, however, only in certain seasons, but it is nevertheless probably quite as hardy as the other Sikkim Rhododendrons from the same elevation. The flowers are usually of a rather deeper yellow than those represented in our plate. Another point in which the plant now figured deviates from the figure by Sir J. D. Hooker cited above is in more lax inflorescence with longer pedicels. In all other respects, however, it agrees well with the original illustration.

DESCRIPTION.—*Shrub* or small tree; twigs rather stout, at first more or less woolly, soon glabrous; bark brown. *Leaves* lanceolate, elliptic-lanceolate or almost elliptic-oblong, obtuse or subacute and mucronate, base slightly to markedly unequal, cuneate or wide-cuneate, or cuneate on one side rounded on the other, $3\frac{1}{4}$–8 in. long, $1\frac{1}{3}$–3 in. wide, coriaceous, green and glabrous above, beneath except on the early glabrous midrib woolly with a closely adpressed cinnamon-brown tomentum, midrib impressed above, very much raised beneath, lateral nerves about 12 on each side somewhat sunk above and raised beneath, secondary venation slightly sunk above, margin somewhat revolute; petiole rather stout, $\frac{1}{2}$–$1\frac{1}{2}$ in. long. *Inflorescence* terminal, many-flowered, laxly capitate; bracts narrow-oblong, acutely acuminate, up to $1\frac{3}{4}$ in. long, $\frac{2}{5}$ in. wide, woolly; pedicels usually about $1\frac{1}{4}$ in. long, soon glabrous, more or less nodding at the apex when the flowers open. *Calyx-lobes* small, glandular. *Corolla* campanulate, about $1\frac{3}{4}$ in. long, straw-yellow dotted with deep red; lobes 5, shorter than the tube, spreading to recurved, imbricate, emarginate. *Stamens* 10, filaments over 1 in. long, shortly hairy below, anthers almost purple, $1\frac{1}{2}$ lin. long. *Ovary* densely woolly, 10-celled; style about as long as the corolla, glabrous; stigma capitate.

Fig. 1, portion of the underside of a leaf; 2, calyx and pistil; 3 and 4 stamens; 5, ovary in transverse section; 6, hair from ovary:—*all enlarged*.

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Tab. 8493.

DEUTZIA longifolia.

Western China.

Saxifragaceae. Tribe Hydrangeae.

Deutzia, *Thunb.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 642.

Deutzia longifolia, *Franch. in Nouv. Arch. Mus. Par.* sér. 2, vol. viii. p. 235, *et in Pl. David.* vol. ii. p. 53; *Koehne in Sargent, Pl. Wilson.* p. 13; *Schneider, Handb. Laubholzk.* vol. ii. p. 935; *Gard. Chron.* 1912, vol. li. p. 409, fig. 195; ab affini *D. densiflora,* Rehd, dentibus, calycis longioribus angustioribusque et a *D. albida,* Batal. cui etiam propinquior praeterea foliis lanceolatis argute serrulatis, petalis roseis, stylis longioribus distincta.

Frutex 1–2-metralis, ramis juvenilibus pilis stellatis minutis adpressis vestitis, ramis vetustis glabratis pallide brunneis cortice plagulis magnis tenuibus soluto. *Folia* lanceolata, acuta vel saepius acuminata, basi leviter vel longiuscule attenuata, marginibus minute arguteque serrulata, 4–9 cm. longa, 2–2·5 cm. lata, crassiuscula, supra saturate viridia, pilis stellatis conspersa, subtus pilis stellatis dense congestis albido-cinerea, in nervis pilis simplicibus additis, nervis lateralibus utrinsecus circiter 4 subtus prominulis. *Cymae* in corymbum multiflorum hemisphaericum vel subpyramidalem ad 6 cm. longum latumque collectae: bracteae inferiores foliaceae, superiores lineares vel filiformes, 5–7 mm. longae; pedicelli ad 1 cm. longi. *Receptaculum* dense stellato-lepidotum, quasi pruinosum, hemisphaericum, 3 mm. diametro. *Sepala* lanceolata vel triangulari-lanceolata, acuta, 3 mm. longa, rubro-marginata, persistentia. *Petala* ovata, roseo-suffusa vel in alasbastro rosea, 1 cm. longa. *Stamina* exteriora filamentis superne 3-alatis, alis lateralibus majoribus ad mediam antheram productis, interiora dente unico lineari antheram superante munita, omnia quam petala multo breviora. *Styli* 5 mm. longi. *Fructus* maturus globosus, 5–6 mm. diametro, albo-pruinosus.—*D. Veitchii,* Wilson in Gard. Chron. 1912, vol. li. suppl. p. xx. fig. 11, in Journ. Roy. Hort. Soc. vol. xxxviii. pars ii. p. cxxxiv. fig. 98, et in Veitch, New Hardy Pl. W. China, 1912, p. 4, cum ic.—O. Stapf.

The *Deutzia* which we here figure was originally discovered by the Abbé David near Moupine in Szechuan and was subsequently collected in various localities in the same province by Mr. E. H. Wilson at altitudes of from 5,000 to 9,000 feet above sea level, when collecting on behalf of Messrs. J. Veitch & Sons, in 1901, and again during his latest Chinese journey. The species was first introduced into cultivation through the Coombe Wood Nursery of the Messrs. Veitch in January, 1902, as an unnamed *Deutzia.* In 1905 it was named *D. Veitchii* on their behalf by Mr. Wilson, and under that name it has become well known and widely established in collections and has been recognised by the Royal Horticultural Society. Thanks, however, to the kindness of Professor Leconte, who has kindly placed at our disposal for study the specimen on which Mr. Franchet's

original description of *D. longifolia* was based, it has been possible to ascertain that the name suggested by Mr. Wilson is superfluous. In 1908 a further supply of seeds was received at Kew from Professor Sargent, Arnold Arboretum; from this consignment was raised the plant from which the material for our illustration has been obtained. In 1909 yet another supply of seed reached Messrs. Veitch. The species varies slightly in size of flower and in depth of colouring; one of the best of its forms is that which was raised by Messrs. Veitch in 1902, and was again raised at Kew in 1908. Like all the other members of the genus, *D. longifolia* rejoices in a rich loamy soil and can be propagated by cuttings of moderately firm wood in July and August. In low-lying districts its flowers are liable to be damaged by late spring frosts, but on the whole it may be regarded as one of the most ornamental of Chinese Deutzias.

Description.—*Shrub*, 3–7 ft. high, young twigs clothed with fine stellate hairs, old branches glabrate, pale brown, bark flaking, flakes thin. *Leaves* lanceolate, acute or often acuminate, base more or less narrowed, margins finely sharply serrulate, $1\frac{1}{2}$–$3\frac{1}{2}$ in. long, $\frac{3}{4}$–1 in. wide, rather thick, dark green above, with scattered stellate hairs, beneath densely grey-white tomentose with stellate hairs, but with a few simple hairs on the nerves, lateral nerves about 4 on each side, somewhat raised beneath. *Cymes* aggregated in a many-flowered hemispherical or almost pyramidal corymb about $2\frac{1}{2}$ in. across; lower bracts leafy, upper linear or filiform, about $\frac{1}{4}$ in. long; pedicels over $\frac{1}{3}$ in. long. *Receptacle* densely stellate-lepidote, almost pruinose, hemispherical, $\frac{1}{8}$ in. wide. *Sepals* lanceolate or triangular-lanceolate, $\frac{1}{8}$ in. long, persisting, their margins red. *Petals* ovate, rose-coloured in bud, suffused with rose when expanded, over $\frac{1}{3}$ in. long. *Stamens* of outer series with filaments 3-winged above, the lateral wings the larger and produced as far as the middle of the anther, those of the inner series with a solitary linear tooth longer than the anther, all much shorter than the petals. *Styles* $\frac{1}{5}$ in. long. *Fruit* when ripe globose, $\frac{1}{5}$–$\frac{1}{4}$ in. wide, white-pruinose.

Fig. 1, base of leaf; 2, section of calyx; 3, stellate scales; 4, 5, 6 and 7, stamens; 8, leaf from a second specimen:—*all enlarged except* 8, *which is of natural size.*

M S. del. J.N. Fitch lith.

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Tab. 8494.

STRONGYLODON pseudolucidus.

Madagascar.

Leguminosae. Tribe Phaseoleae.

Strongylodon, *Vogel*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 532.

Strongylodon pseudolucidus, *Craib*; species *S. lucido*, Seem. proxima bracteis bracteolisque multo majoribus, floribus minoribus recedit.

Frutex scandens; ramuli glabri, striatuli. *Folia* trifoliolata, ad 12 cm. longa, petiolo 7–8 cm. longo supra canaliculato glabro suffulta; stipulae late deltoideae, circiter 4 mm. longae et latae, virides, distincte plurinervatae; foliola lateralia valde inaequilatera, latere altero dimidiatim ovata, basi rotundata, altero dimidiatim suboblonga, basi late cuneata vel rotundato-cuneata, ad 8·5 cm. longa et 5 cm. lata, terminalia a lateralibus circiter 3 cm. distantia, ovata, basi latissime cuneata vel rotundata, ad 9 cm. longa et 5·5 cm. lata, omnia apice acuminata, mucronulata, glabra, viridia, membranacea, e basi trinervata, nervis secundariis (e costa ortis) 4–5 cum nervulis pagina superiore conspicuis inferiore prominulis vel subprominulis; petioluli 5 mm. longi, pilis albis brevibus hic illic instructi; stipellae lineari-lanceolatae, acutae, petiolulis subaequales. *Racemi* axillares, ad 7 cm. longi, pedunculo communi 5 cm. longo glabro suffulti; nodi conspicui, flores tres gerentes; bracteae hyalinae, fugaces, circiter 5 mm. longae, brevissime ciliatae; pedicelli ad 2·5 cm. longi, glabri, summo apice bracteolis duobus hyalinis rotundatis ad 4 mm. longis brevissime ciliatis ante anthesin deciduis instructi. *Calyx* cylindricus, circiter 8 mm. longus, lobis brevibus rotundatis ciliolatis. *Vexillum* sub anthesin reflexum, oblongo-lanceolatum, apice emarginulatum, basi latere utroque auriculatum, 22 mm. longum, fere 12 mm. latum, ungui circiter 4 mm. longo suffultum; alae 12 mm. longae, fere 4·5 mm. latae, ungui 9 mm. longo suffultae; carina 2 cm. longa, 6 mm. lata, ungui 8 mm. longo adjecto. *Stamen* vexillare liberum. *Ovarium* 3 mm. longum, stipite circiter 1 cm. longo suffultum, uni- vel bi-ovulatum; stylus gracilis, circiter 15 mm. longus.—*S. ruber*, Thw. Enum. Pl. Zeyl. p. 89; Baker in Hook. f. Fl. Brit. Ind. vol. ii. p. 191; Prain in Journ. As. Soc. Beng. vol. lxvi. pars 2, p. 411; non Vogel.—W. G. Craib.

The Leguminous genus *Strongylodon* is widely spread from the Mascarenes to Melanesia with, however, two more or less distinct centres in Madagascar and in the Philippines, in each of which areas three or four endemic species appear to occur. The oldest of the known species is one which is widely spread in Polynesia from the Sandwich Islands to Fiji, first described in 1786 by the younger Forster as *Glycine lucida*, and in 1836 treated by Vogel as the basis of this distinct genus under the name *S. ruber*. Thirty years later Seemann again dealt with the plant under the more

strictly accurate name *S. lucidus*. About the same time Thwaites discovered what he assumed to be the Polynesian plant on the Ceylon coast and used for it Vogel's name; thirty years later it was found that the Ceylon form is particularly abundant on the Andaman coast. In 1886, however, Drake del Castillo pointed out that the Ceylon *Strongylodon* is not the same as the Polynesian one. This Ceylon plant, which extends from the Andamans and Ceylon to Christmas Island, North Australia, New Guinea and New Caledonia, is readily distinguished from the Polynesian species by its much smaller flowers and its smaller pods. It is now found that this littoral species also extends westward from Ceylon to Madagascar; the material on which our plate is based was raised by Messrs. Charlesworth & Co., Haywards Heath, from a seed received by them from a correspondent in Madagascar, and was communicated by them for identification in December, 1912, and was recognised as being the *Strongylodon ruber* of the coasts of Ceylon and the Andamans. Since, however, the name *S. ruber* belongs, as a synonym, to the Pacific *S. lucidus*, and since Drake, when pointing out that the two are specifically distinct, did not suggest a name for the more western plant, it has been necessary to provide one now. *S. pseudolucidus*, Messrs. Charlesworth find, thrives satisfactorily and is easy to grow in a warm conservatory.

DESCRIPTION.—*Shrub*, climbing; twigs glabrous, faintly striate. *Leaves* 3-foliolate, nearly 5 in. long; petiole glabrous, channelled above, 3 in. long; stipules wide-deltoid, about 1 lin. long and wide, green, many-veined; lateral leaflets unequal at the base, ovate rounded on the outer, oblong more or less cuneate on the inner aspect, $3\frac{1}{2}$ in. long, 2 in. wide, terminal about $1\frac{1}{4}$ in. beyond the lateral leaflets, ovate, base wide-cuneate or rounded, $3\frac{1}{2}$ in. long, $2\frac{1}{4}$ in. wide, all acuminate, mucronulate, glabrous, green, membranous, somewhat polished, 3-nerved from the base with 4–5 pairs of lateral nerves spreading from the midrib on each side, visible on the upper surface and somewhat raised on the lower; petiolules about $\frac{1}{5}$ in. long, with a few white hairs; stipels linear-lanceolate, acute, about as long as the petiolules. *Racemes* axillary, up to 3 in. long; peduncle glabrous, 2 in. long, nodes distinct, each 3-flowered; bracts

hyaline, fugacious, about $\frac{1}{5}$ in. long, shortly ciliate; pedicels up to 1 in. long, glabrous, with a pair of hyaline rounded shortly ciliate deciduous apical bracteoles. *Calyx* cylindric, about $\frac{1}{3}$ in. long; lobes short, rounded, ciliolate. *Standard* reflexed in flower, oblong-lanceolate, faintly emarginate, auriculate at the base, under 1 in. long, about $\frac{1}{2}$ in. wide, claw $\frac{1}{6}$ in. long; wings $\frac{1}{2}$ in. long, about $\frac{1}{5}$ in. wide, claw $\frac{1}{3}$ in. long; keel $\frac{3}{4}$ in. long, $\frac{1}{4}$ in. wide, claw $\frac{1}{3}$ in. long. *Vexillary stamen* free. *Ovary* small, 1–2-ovuled, long-stipitate; style slender, about $\frac{2}{3}$ in. long.

Fig. 1, calyx, laid open, showing stamens; 2, base of standard; 3, wing-petal. 4, keel-petal; 5, pistil; 6, ovary laid open to show ovules:—*all enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lith.

L. Reeve & Co. London

TAB. 8495.

DENDROBIUM SCHUETZEI.

Philippines.

ORCHIDACEAE. Tribe EPIDENDREAE.

DENDROBIUM, *Swartz*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 498.

Dendrobium Schuetzei, *Rolfe in Orch. Rev.* 1911, p. 224; 1912, p. 337, fig. 47; *Gard. Chron.* 1911, vol. l. p. 42; 1912, vol. lii. p. 229, fig. 102; *Orch. World*, vol. iii. p. 19; a *D. Dearei*, Reichb. f., pseudobulbis brevioribus floribus multo majoribus et mento brevius et obtuso differt.

Herba epiphytica, 15–40 cm. alta. *Caules* erecti, subcylindrici, medio incrassati, sulcati, basi attenuati, dense foliati. *Folia* subpatentia, elliptico-oblonga, obtusa, coriacea, 8–10 cm. longa, 2·5–3·5 cm. lata. *Pedunculi* subterminales, breves, pauciflori. *Bracteae* oblongae, subacutae, breves. *Pedicelli* circiter 4 cm. longi. *Flores* magni, speciosi, albi, labelli basi viridi. *Sepala* subpatentia; posticum oblongo-lanceolatum, acuminatum, 3 cm. longum; lateralia triangularia, acuta, carinata, 3–5 cm. longa; mentum obtusum, 1·3 cm. longum. *Petala* late ovato-orbicularia, apiculata, 4·5–5·5 cm. longa, 3·5–4 cm. lata. *Labellum* trilobum, 4–4·5 cm. longum; lobi laterales subincurvi, late rotundati; lobus intermedius subrecurvus, late obovatus, truncatus vel emarginatus, apiculatus, crenulatus, 3·5–4 cm. latus; discus basi obtuse carinatus. *Columna* lata, 6 mm. longa; alae falcato-oblongae.—**R. A. ROLFE.**

The handsome *Dendrobium* here figured is a native of the Philippines, whence it was introduced by Messrs. Sander & Sons, St. Albans, with whom it flowered for the first time in September, 1912; the notes published in the previous year were prepared from dried specimens. A plant purchased for the Kew collection from Messrs. Sander flowered in the tropical Orchid House in October, 1912. In the preparation of our plate use has been made of this latter plant and of photographs kindly supplied by Messrs. Sander. A member of the section *Formosae*, *D. Schuetzei* is nearly allied to *D. Dearei*, Reichb. f., and to *D. Sanderae*, Rolfe, the latter figured at t. 8351 of this work, both of which are Philippine species. Our plant has, however, larger flowers than either, with a much shorter obtuse mentum, so that it has more of the general appearance of the Indian *D. formosum*, Roxb., though it is without the large orange-yellow disk of the latter. In *D. Schuetzei* the flowers are white with some green on the disk of the lip and a tinge of purple at the

extreme base. The species thrives well at Kew under the treatment suitable for its two Philippine allies. The number of flowers to a peduncle apparently varies from one to five.

DESCRIPTION.—*Herb*, epiphytic, 6–16 in. high; stems erect, subcylindric, somewhat thickened in the middle, sulcate, narrowed to the base, densely leafy. *Leaves* somewhat spreading, elliptic-oblong, obtuse, coriaceous, 3–4 in. long, 1–1¼ in. broad. *Peduncles* subterminal, short, few-flowered; pedicels about 1½ in. long; bracts short, oblong, subacute. *Flowers* large, showy, white with the base of the lip green. *Sepals* somewhat spreading; posterior oblong-lanceolate, acuminate, 1¼ in. long; lateral triangular, keeled, acute, 1¼–2 in. long; mentum obtuse, ½ in. long. *Petals* wide ovate-orbicular, apiculate, 1¾–2¼ in. long, 1¼–1½ in. wide. *Lip* 3-lobed, 1½–1¾ in. long; lateral lobes somewhat incurved, wide-rounded; mid-lobe somewhat recurved, wide obovate, truncate or emarginate, apiculate, crenulate, about 1½ in. across; disk bluntly keeled at the base. *Column* broad, ¼ in. long; wings falcate-oblong.

Fig. 1, column; 2, anther-cap; 3, pollinia; 4, sketch of an entire plant:—*all enlarged except* 4, *which is much reduced.*

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M.S.del.J.N.Fitch lith.

Vincent Brooks, Day & Son Lith. imp.

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Tab. 8496.

SAXIFRAGA Stribrnyi.

Bulgaria.

Saxifragaceae. Tribe Saxifrageae.

Saxifraga, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 635.

Saxifraga (§ Kabschia) **Stribrnyi,** *Velenovský Neue Nachtr. Fl. Bulgar.* 1902, p. 5, nomen; *Irving in Gard. Chron.* 1909, vol. xlv. p. 259, et vol. xlvi. p. 195, f. 81; affinis *S. mediae,* Gouan, sed inflorescentiis ramosis, floribusque nutantibus differt.

Herba caespitosa, caudiculis brevibus dense foliosis; caules floriferi erecti, ramosi, parce foliosi, patule glanduloso-pilosi. *Folia* inferiora rosulata, patula, sessilia, spathulato-oblanceolata, apice submucronata, usque ad 2·5 cm. longa et 0·6 cm. lata, carnosa, glauca, supra foveolis intramarginalibus vix 1·5 mm. distantibus instructa, infra carinata, margine anguste cartilagineo basin versus parce ciliato; folia caulina oblongo-spathulata, subacuta, 0·5–1 cm. longa, 1·5–3 mm. lata, viridia, interdum apicem versus rubella, margine inferne glanduloso-ciliata et utrinque parce glanduloso-pilosa. *Inflorescentia* cymosa, rami patentes vel leviter recurvi, usque ad 4 cm. longi; bracteae foliis caulinis subsimiles sed breviores, plerumque utrinque dense glanduloso-pilosae; pedicelli ad 1 cm. longi, patente glanduloso-pilosi. *Flores* nutantes, circiter 7 mm. diametro. *Calyx* campanulatus, medio circiter 2·5 mm. diametro, extra rubro-purpureus, dense glanduloso pilosus; lobi subaequales, oblongo-ovati, apice rotundati, circiter 2 mm. longi, extra glanduloso-pilosi. *Petala* suberecta, late spathulata, apice obtuse dentata, circiter 2·5 mm. longa et 1·75 mm. lata, carminea, glabra. *Stamina* petalis breviora. *Styli* 2, liberi, erecti, glabri. —*S. porophylla,* var. *Stribrnyi,* Velenovský, Fl. Bulgar. Suppl. I. 1898, p. 114.—J. Hutchinson.

The small Saxifrage which is here figured is a native of Bulgaria, where it was first found in 1893 on Mount Rhodope by Stribrný. Velenovský, who at first thought that it might be considered a variety of *S. porophylla,* Bertol., subsequently adopted the view that it ought to be considered a distinct species, a view that further investigation has served to confirm. In 1906 it was again gathered in its original locality by Adamović, and in that year the plant from which our illustration has been prepared was obtained by purchase from Mr. Sundermann, of Lindau, Bavaria. According to Velenovský *S. Stribrnyi* is in nature found in association with *S. Frederici-Augusti,* Bias, the affinities of which, of *S. media,* Gouan, and of the present plant have already been discussed at t. 8308 of this

work. The affinity of our plant is closest with *S. media*, figured at t. 7315 of this work, but it is easily distinguished from *S. media* by its more branched inflorescence with nodding flowers. *S. Stribrnyi* is, perhaps, seen to most advantage when cultivated in a pot in a cold frame, but it also does well in the Rockery, where it flowers sometimes as early as February. The plant figured, which had been grown in a frame, flowered in April, 1909. The species is a perennial one with clustered rosettes, but at Kew these clusters do not become enlarged as in some of the other species of the group to which our plant belongs.

DESCRIPTION.—*Herb*, tufted; crowns short, densely leafy; flowering stems erect, branched, sparingly leafy, patently glandular-pilose. *Leaves* rosulate at the base, spreading, sessile, spathulate-oblanceolate, somewhat mucronulate, up to 1 in. long and $\frac{1}{4}$ in. wide, fleshy, glaucous, beset above with intramarginal pits barely 1 lin. apart, keeled beneath, margin narrowly cartilaginous, sparingly ciliate towards the base; stem-leaves oblong-spathulate, subacute, $\frac{1}{5}$–$\frac{2}{5}$ in. long, up to $\frac{1}{8}$ in. wide, green, sometimes reddish towards the tip, margin glandular-ciliate towards the base and sparingly glandular-pilose on both sides. *Inflorescence* cymose; branches spreading or slightly recurved, up to $1\frac{1}{2}$ in. long; bracts resembling the stem-leaves, but shorter and usually densely glandular-hairy on both surfaces; pedicels up to $\frac{2}{5}$ in. long, patently glandular-hairy. *Flowers* nodding, about $\frac{1}{3}$ in. across. *Calyx* campanulate, about $\frac{1}{10}$ in. across in the middle, reddish-purple and densely glandular-hairy outside; lobes subequal, oblong-ovate, rounded at the tip, about 1 lin. long, glandular-hairy outside. *Petals* suberect, wide spathulate, apex bluntly toothed, about $\frac{1}{10}$ in. long and under $\frac{1}{12}$ in. wide, glabrous, carmine. *Stamens* shorter than the petals. *Styles* 2, free, erect, glabrous.

Fig. 1, basal leaf; 2, bract; 3, hairs from margin of bract; 4, flower; 5, pistil; 6 and 7, stamens; 8, pistil:—*all enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks Day & Son Lith.

L. Reeve & Co. London

Tab. 8497.

RHODODENDRON Augustinii.

China.

Ericaceae. Tribe Rhodoreae.

Rhododendron, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron Augustinii, *Hemsl. in Journ. Linn. Soc.* vol. xxvi. p. 19; *Flora & Sylva*, 1905, p. 162; *Rev. Hort.* 1909, p. 19; *Le Jardin*, 1909, p. 158; *Hemsl. et Wilson in Kew Bull.* 1910, p. 114; *Gard. Chron.* 1912, vol. lii. p. 4; ab affini *R. lutescente*, Franch., foliorum costa subtus pubescente facile distinguendum.

Frutex 1–1·5 m. altus; ramuli primum pubescentes, pallide corticati, lepidoti, demum glabri, cortice brunneo obtecti, lepidibus sparsioribus vix conspicuis instructi. *Folia* lanceolata vel late lanceolata, apice acuta vel fere acuminata, mucronata, basi obtuse cuneata, 4–6·2 cm. longa, 1·3–2·2 cm. lata, chartaceo-coriacea, supra viridia, puberula, subtus pallidiora, costa tantum conspicue longe albo-pubescentia, lepidibus satis crebris ornata, costa subtus prominente, nervis lateralibus utrinque circiter 8 pagina utraque subconspicuis, nervulis supra impressis, margine parum revoluta; basin versus juventute setis paucis longis instructa; petioli 3–7 mm. longi, pubescentes. *Pedicelli* 11–17 mm. longi, lepidoti. *Calycis* lobi breves, apice rotundati, ciliati. *Corolla* campanulata; tubus 14 mm. longus; lobi 5, patentes, margine undulati, superiores maculati, ovati vel oblongo-ovati, acutiusculi vel obtusi ad 23 mm. longi et 16 mm. lati. *Stamina* 10, parum exserta, filamentis inferne pilosis. *Ovarium* dense lepidotum nisi basi apiceque pilosum, stylus 35 mm. longus, glaber.—W. G. Craib.

The Rhododendron now figured, which was originally named in compliment to Mr. Augustine Henry, its first discoverer, appears to be one of the most hardy and free-growing of the new Chinese species of the genus and thrives in any open soil free from lime, although the ideal soil is one of a peaty nature. It can be increased by cuttings made of the current year's growth taken in late July when the wood is becoming firm. The plant from which our illustration has been prepared was obtained for Kew from Messrs. J. Veitch & Sons in 1908, their stock having been raised from seeds procured by Mr. E. H. Wilson, who met with the species both in Hupeh, where it had formerly been gathered by Mr. Henry, and in Szechuan. It is, however, probable that there was an independent and earlier introduction of this species to

European gardens, because it was already not only in cultivation but in flower in the garden of Mr. M. L. de Vilmorin at Les Barres in 1904. The flowers vary somewhat in colour from white to pink and pale purple, with yellow or orange blotches on the dorsal lobes of the corolla. Its nearest ally is *R. lutescens*, Franch., but from this it is easily distinguished, even when out of flower, by the line of persistent hairs on the midrib of the leaf beneath.

DESCRIPTION.—*Shrub*, 3½–5 ft. high; shoots at first pubescent, with pale lepidote bark, ultimately glabrous, the bark turning brown and with the scales more scattered and hardly visible. *Leaves* lanceolate or wide lanceolate, acute or subacuminate, mucronate, base wide cuneate, 1½–2½ in. long, ½–⅞ in. wide, firmly papery, green and puberulous above, paler beneath and hirsute with long persistent white hairs only on the midrib, elsewhere rather copiously lepidote, midrib raised beneath, lateral nerves about 8 on each side, fairly visible on both surfaces, the finer nervation sunk above, margin somewhat revolute, towards the base when young beset with a few long deciduous hairs; petiole ⅛–¼ in. long, pubescent. *Flowers* showy; pedicels ½–⅔ in. long, lepidote. *Calyx-lobes* short, ciliate, rounded. *Corolla* campanulate; tube over ½ in. long; lobes 5, spreading, their margins undulate, the upper lobes blotched, ovate or ovate-oblong, moderately acute or quite obtuse, nearly 1 in. long, ⅔ in. wide. *Stamens* 10, slightly exserted; filaments pilose below. *Ovary* densely lepidote and hairy except at base and tip; style 1⅓ in. long, glabrous.

Fig. 1, petiole and base of leaf, seen from below, showing disposition of scales and hairs; 2, scales from leaf; 3, calyx and pistil; 4, ovary; 5 and 6, stamens; 7, transverse section of ovary:—*all enlarged.*

M S. del J.N. Fitch Lith.

Vincent Brooks, Day & Son Ltd. imp.

L. Reeve & Co. London.

TAB. 8498.

HYPERICUM AUREUM.

South-Eastern United States.

HYPERICACEAE. Tribe HYPERICEAE.

HYPERICUM, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 165.

Hypericum aureum, *Bartram, Trav.* p. 383; *Torr. & Gray, Fl. N. Am.* vol. i. p. 161; *Coulter in A. Gray, Syn. Fl. N. Am.* vol. i. pars 1, p. 286; *Small, Fl. S. E. United States*, p. 790; affine *H. myrtifolio*, Lam., a quo foliis basi angustatis nec cordatis, floribus majoribus, capsula integra recedit.

Planta suffruticosa, superne late ramosa, 0·6–1·2 m. alta. *Rami* ramulique anguste bialati, alis a basi foliorum ad nodum inferiorem decurrentibus, alis duabus intermediis inconspicuis deorsum paullo productis. *Folia* oblonga, apice rotundata vel obtusa, plus minusve apiculata, in basin angustata, 3–7 cm. longa, 1–2 cm. lata. tenuiter coriacea, glanduloso-punctata, subtus glaucescentia; petioli brevissimi. *Cymae* 3-florae, in paniculam foliatam dispositae, floribus solitariis interdum in iisdem axillis infra pedunculos triadum ortis; bracteae foliaceae. *Sepala* foliacea, elliptico-oblonga vel obovato-oblonga, apiculata, glanduloso-punctata, valde inaequalia, 3 exteriora 8–9 mm. longa, 2 interiora 5 mm. longa. *Petala* lutea, leviter deflexa, oblique obovata, 1·5 cm. longa. *Stamina* numerosissima, 1 cm. longa, aurantiaca; antherae dorsifixae, connectivo glandulifero. *Ovarium* anguste ovoideum, integrum, 1-loculare, placentis 3 parietalibus valde intrusis; ovula plurima; styli 3, primum arcte adpressi, demum divergentes. *Capsula* ovoideo-conica, integra, 10–12 mm. longa.—*H. frondosum*, Michx. Fl. Bor. Am. vol. ii. p. 81. *H. amoenum*, Pursh, Fl. Am. Sept. vol. ii. p. 375.—**T. A. SPRAGUE.**

The St. John's Wort which is here figured is a native of the South-Eastern United States, and is widely distributed from South Carolina and Georgia to Tennessee, Alabama and Texas. Though it has not before found a place in our pages, *Hypericum aureum* is an old plant in gardens, and the example from which our plate was prepared is one of a batch raised from seed saved at Kew. It can also be quite easily propagated by cuttings in late summer. Among the St. John's Worts grown in gardens, *H. aureum* is well marked by its deflexed yellow petals, its orange stamens and its leafy sepals. It is useful, like most of the cultivated Hypericums, for making a display in August when few woody plants are in blossom. It is quite hardy

and thrives best in a well-drained loam of moderate richness. In habit it differs from many of its congeners in forming a distinct stem which gives the plant the appearance of a miniature tree. Botanically *H. aureum* is most nearly related to *H. myrtifolium*, Lam., another North American species which has 3 styles and a 1-celled ovary, as well as foliaceous sepals. But from *H. myrtifolium* our plant is readily distinguished by its narrow in place of cordate leaf bases.

DESCRIPTION.—*Undershrub*, widely branched above, 2–4 ft. high; branches and twigs narrowly 2-winged, the wings decurrent from the leaf-bases to the node next below, with two faint intermediate wings prolonged somewhat further down. *Leaves* oblong, rounded or blunt, and more or less apiculate at the tip, narrowed to the base, $1\frac{1}{4}$–3 in. long, $\frac{2}{5}$–$\frac{4}{5}$ in. wide, thinly leathery, gland-dotted, glaucescent beneath; petioles very short. *Cymes* 3-flowered, forming a leafy panicle, with at times solitary flowers situated in the same axils as, but below the cyme-peduncles; bracts leafy. *Sepals* leafy, elliptic-oblong or obovate-oblong, apiculate, gland-dotted, very unequal, the 3 outer $\frac{1}{3}$ in. long, the 2 inner $\frac{1}{5}$ in. long. *Petals* yellow, somewhat deflexed, obliquely obovate, $\frac{2}{3}$ in. long. *Stamens* very many, $\frac{2}{5}$ in. long, orange-yellow; anthers dorsifixed, connective glanduliferous. *Ovary* narrow ovoid, entire, 1-celled; placentas 3, parietal, far-intruded; ovules very many; styles 3, at first closely adpressed, at length diverging. *Capsule* ovoid-conic, entire, $\frac{1}{3}$–$\frac{1}{2}$ in. long.

Fig. 1, calyx and pistil; 2 and 3, anthers:—*all enlarged.*

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M.S. del. J.N. Fitch lith

Vincent Brooks Day & Son Ltd imp

L. Reeve & Co. London.

TAB. 8499.

AMELANCHIER OLIGOCARPA.

North America.

ROSACEAE. Tribe POMEAE.

AMELANCHIER, *Medic.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 628.

Amelanchier oligocarpa, *Roem. Syn.* fasc. iii. *Ros.* p. 145; affinis *A. canadensi,* Torr. et Gray, a qua statura humili, foliis utrinque magis minusve acutis minute crenato-serratis, inflorescentiis paucifloris, ovarii vertice pubescente et fructu atro-purpureo longiore quam lato differt.

Frutex plerumque humilis, raro sesquimetralis, ramis glabris cortice fusco-nitente obtectis. *Folia* oblonga vel oblongo-elliptica, utrinque breviter acuta vel basi subobtusa, minute crenato-serrata, 3–5 cm. longa, 2–2·5 cm. lata, in gemma dense pubescentia, citissime glabrata, nervis obliquis utrinque 8–12; petiolus ·5–1 (vel ultra) 1 cm. longus; stipulae lineari-filiformes, purpureae, circiter 5 mm. longae. *Flores* in brachycladiis 1–3, rarius 4; pedicelli villosuli, 1·5–2 cm. longi. *Receptaculum* turbinatum, 3 mm. altum, basi villosulum, superne glabrum. *Sepala* e basi triangulari filiformiter acuminata, apicibus rubris, 3 mm. longa, extus glabra, intus villosulo-pubescentia. *Petala* alba, late oblonga, 6–8 mm. longa. *Antherae* flavae. *Ovarii* vertex pubescens. *Fructus* atro-purpureus, pruinosus, globoso-pyriformis vel globoso-ellipsoideus, 8–9 mm. longus, 6–7 mm. diametro.—*A. canadensis,* var. *oligocarpa,* Torr. & Gray, Fl. N. Am. vol. i. p. 474. *Mespilus canadensis,* var. *oligocarpa,* Michx. Fl. Bor. Am. vol. i. p. 291; *S. Watson in Garden & Forest,* 1888, p. 247; *Gray, Manual,* ed. vi. p. 167; *C. Schneider, Handb. Laubholzk.* vol. i. p. 737.—O. STAPF.

The subject of our illustration, *Amelanchier oligocarpa,* is a denizen of cold swamps and mountain bogs from Labrador southward to the shores of Lake Superior and the northern portion of New York State. In habit it is the most low-growing species of its genus, and coming as it does from a more northerly habitat than any other, it is exceedingly hardy. Yet it has always been one of the rarest of shrubs in our collections, some form of *A. canadensis,* Torr. & Gray, being as a rule supplied under the name, a circumstance which may perhaps have helped to account for its occasional treatment as a variety of *A. canadensis.* In spite of this, *A. oligocarpa* is singularly unlike *A. canadensis,* and is well and easily distinguished by the few-flowered inflorescences with one to three, very rarely four blossoms. The species thrives best in a good loamy soil. The plant from which

the material for our figure has been obtained is one which was received at Kew from the Arnold Arboretum in 1910.

DESCRIPTION.—*Shrub*, usually dwarf, rarely up to 5 ft. high; twigs glabrous, bark shining brown. *Leaves* oblong or oblong-elliptic, shortly narrowed to apex and base or with the base somewhat rounded, margin finely crenate-serrate, $1\frac{1}{4}$–2 in. long, $\frac{3}{4}$–1 in. wide, densely pubescent in bud, very quickly glabrous, lateral veins 8–12 on each side, oblique; petiole $\frac{1}{5}$–$\frac{1}{2}$ in. long; stipules linear-filiform, purple, about $\frac{1}{5}$ in. long. *Flowers* 1–3, rarely 4 to a flowering shoot; pedicels somewhat villous, $\frac{3}{5}$–$\frac{3}{4}$ in. long. *Receptacle* turbinate, $1\frac{1}{2}$ lin. deep, somewhat villous below, glabrous above. *Sepals* finely acuminate from a triangular base, their tips red, glabrous outside, villous within, $1\frac{1}{2}$ lin. long. *Petals* white, wide oblong, $\frac{1}{4}$–$\frac{1}{3}$ in. long. *Anthers* yellow. *Ovary* pubescent at the top. *Fruit* dark purple, pruinose, rather widely pyriform or ellipsoid, $\frac{1}{3}$ in. long, $\frac{1}{4}$ in. wide.

Fig. 1, young leaf with stipules; 2, bud; 3, vertical section of a flower, the petals removed; 4 and 5, anthers; 6, transverse section of an ovary, two ovules removed to show their position in the cell:—*all enlarged.*

M. S. del, J. N. Fitch lith.

Vincent Brooks, Day & Son Ld. imp.

L. Reeve & Co. London

Tab. 8500.

OSBECKIA stellata.

India and China.

Melastomaceae. Tribe Osbeckieae.

Osbeckia, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 744.

Osbeckia stellata, *D. Don, Prodr. Fl. Nepal.* p. 221, *et in Bot. Reg.* t. 674; *Hook. Exot. Fl.* t. 37; *DC. Prodr.* vol. iii. p. 142 (var. β *exclus.*); species *O. hispidissimae,* Wight affinis sed ramulis et foliis sparse strigosis, foliorum basibus rotundatis differt.

Frutex, 1–2 m. altus. *Ramuli* tetragoni, superne rubentes, inferne cortice tenui obtecti, scabri. *Folia* opposita, ovato-lanceolata, apice acuminata, basi rotundata, 6–15 cm. longa, 2–5 cm. lata, membranacea, sparse et brevissime strigillosa, ciliata, nervis 5; petioli 0·8–1 cm. longi. *Flores* terminales in cymam paucifloram aggregati; bracteae late triangulares, 5 mm. longae, 5 mm. latae, ciliatae. *Calycis* tubus urceolatus, pallide viridis, 1·5 cm. longus, 1 cm. diametro; segmenta 4, lineari-lanceolata, acute serrata, 1·3 cm. longa, pili stellati, stipitati, apud calycis basin minuti, prope apicem ad 0·8 mm. longi, stipitibus viridibus, radiis circa 8 rubentibus. *Corolla* lilacino-rubens, petalis 4 late ovatis vel orbicularibus ciliatis 3·5 cm. longis 3 cm. latis. *Stamina* 8, aequalia, lutea; antherae incurvae connectivo antice bicalloso. *Ovarium* apice setosum; stylus albus, elongatus, apice curvatus; stigma nigrum, simplex.—*O. speciosa,* Hort. ex Naud. in Ann. Sc. Nat. sér. 3, vol. xiv. p. 73. *O. crinita* β, Benth. MSS. in Herb. Kew. *O. septemnervia,* Ham. in Wall. Cat. n. 4062 B.—J. J. Clark.

The *Osbeckia* which forms the subject of our illustration appears to have first attracted the attention of Dr. F. Buchanan (afterwards Hamilton) when he accompanied the embassy of Captain Knox to the Court of Nepal in 1802. None of the seeds then sent by him to Dr. Roxburgh, the superintendent of the Botanic Garden at Calcutta, appear to have reached Europe in a germinable state, and it was not until the period from 1816 to 1822, when Dr. Wallich, then in charge of the Calcutta garden, was successful in obtaining Himalayan seeds, that the plant was introduced to English horticulture. These seeds found their way to various prominent nurserymen, and by 1820 the plant was already under cultivation, by whom first raised is uncertain. In 1822 Messrs. Shepherd of Liverpool advertised the species as raised by them from seeds collected near Khatmandu in Nepal. In the manuscript of his "Exotic

Flora," Sir W. J. Hooker described this species as *O. crinita*, but before the description appeared, the name was altered to *O. stellata* which had already been published by Dr. D. Don. The species, which extends from the North-Western Himalaya to China, has again been introduced to Europe from the Calcutta garden; the material for our figure has been derived from a plant raised from Sikkim seeds sent from the Royal Botanic Garden, Calcutta, by Major Gage. The plant is easily grown, and under ordinary greenhouse conditions it forms a shrub about two feet in height which flowers in autumn.

DESCRIPTION.—*Shrub*, 2–7 ft. high; branchlets 4-angled, reddish upwards, below covered with a thin bark, scabrid. *Leaves* opposite, ovate-lanceolate, acuminate, base rounded, $2\frac{1}{2}$–6 in. long, $\frac{3}{4}$–2 in. wide, membranous, sparingly and shortly strigillose, ciliate, 5-nerved from the base; petioles $\frac{1}{3}$–$\frac{2}{5}$ in. long. *Flowers* terminal, clustered in few-flowered cymes; bracts wide triangular, $\frac{1}{5}$ in. long and wide, ciliate. *Calyx-tube* urceolate, pale-green, $\frac{3}{5}$ in. long, $\frac{2}{5}$ in. wide; segments 4, linear-lanceolate, sharply serrate, $\frac{1}{2}$ in. long; hairs stellate, stalked, near the base minute, towards the apex larger; stalks of the hairs green, rays about 8 to a hair, reddish. *Corolla* lilac-red; petals 4, wide ovate or orbicular, ciliate, $1\frac{1}{2}$ in. long, $1\frac{1}{4}$ in. wide. *Stamens* 8, equal, yellow; anthers incurved, connective 2-callose in front. *Ovary* setose at the tip; style white, elongate, declinate, upcurved at the tip; stigma black, simple.

Fig. 1, portion of a leaf; 2, vertical section of calyx and pistil; 3 and 4, anthers; 5, a hair from the ovary :—*all enlarged.*

M.S.del.J.N.Fitch lith.

Vincent Brooks, Day & Son Lt^d imp

Tab. 8501.

AGAVE Warelliana.

Mexico.

Amaryllidaceae. Tribe **Agaveae.**

Agave, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 738.

Agave (Littaea) Warelliana, *Baker in Gard. Chron.* 1877, vol. viii. p. 264, fig. 53; species e grege *Littaearum* perianthiis tubulosis segmentisque recurvis, maxime affinis *A. chiapensi*, Jacobi et *A. macranthae*, Tod., sed a prima differt tubo longiore, a secunda foliorum forma et aculeis minoribus.

Suffrutex. Rosula acaulis vel subcaulescens, parce sobolifera et post anthesin ex axillis ramosa, dense foliata, circiter 1 m. alta et 1·70 m. lata. *Folia* laete et pallide viridia, vix glaucescentia, subnitida, erecto-patentia, lanceolato-spathulata, acuminata, 70–75 cm. longa, supra medium 13–14 cm. lata, basin versus ad 9–10 cm. constricta, usque medium convexa, superne plano-concava, dorso convexa, basi carnosa circiter 6–7 cm. crassa, superne tenuiora sed satis rigida; spina terminalis 18–20 mm. longa et 3–4 mm. lata, recta, atro-brunnea, supra plana et ultra medium late canaliculata, ad margines longe decurrens; margines linea atro-brunnea vel demum grisea usque basin fere muniti aculeisque parvis vix 1 mm. longis et 2 mm. inter se distantibus rectis incurvis vel recurvatis serrulati. *Inflorescentia* circiter 5 m. alta; scapus validus adscendens 2 m. longus, viridi-brunneo-maculatus, bracteis vacuis numerosis erectis adpressis deltoideis longe acuminatis mucronatis obtectus; bracteae inferiores circiter 28 cm. et ultra, superiores 18 cm. longae; spica densissima 3 m. longa et circiter 34–35 cm. lata, bracteae magnae, circiter 15–17 cm. longae iis scapi similes, summi gradatim minores. *Flores* breviter pedicellati, 90–95 mm. longi; ovarium 4 cm. longum, utrinque attenuatum, trigonum, laeve, laete viride, subrectum; perianthii tubus decurvatus, obconicus, 14–15 mm. longus, extra 6-sulcatus; segmenta late lineari-lanceolata, obtusiuscula, 35 mm. longa, intus luteola, dorso violaceo-brunneo-adspersa, exteriora acutiora, interiora obtusiora latiora, 10–11 mm. lata, dorso late carinata; filamenta ad faucem inserta, 85 mm. longa, violaceo-brunnea, basi pallida, antherae sulphureae 32 mm. longae; stylus robustus concolor fere 14 cm. longus. *Capsula* obclavata, breviter rostrata, trigona, lignosa, 35–38 cm. longa et 18 mm. lata; semina atra, 6 mm. lata, subsemiorbiculata.—**A. Berger.**

Agave Warelliana was first described by Mr. Baker from the famous collection of Mr. Wilson Saunders. It is still an uncommon, but is a very attractive plant in gardens. During the summer of 1912 it flowered at La Mortola in the garden of Lady Hanbury, and also in the garden of Professor G. Roster at Ottonella in the Island of Elba, From the plant which flowered at La Mortola was derived the material from which our figure has been prepared.

June, 1913.

Among the Agaves generally included in the section *Littaea* on account of their cylindrical inflorescences, our species belongs to a special group the members of which have tubular flowers with recurved segments, as in *A. polyacantha*, C. Koch. Its nearest allies are *A. macrantha*, Tod. and *A. chiapensis*, Jacobi. All have rather large flowers and bracts. But in *A. chiapensis* the flowers are smaller than in *A. Warelliana* and have a shorter tube; the leaf characters also differ even more markedly. Between *A. macrantha*, Tod., and *A. Warelliana* there are relatively minor differences, especially in the shape of the leaves and their marginal teeth, so that it is not impossible that the two may be extreme forms of one rather variable species. If this view be adopted, Mr. Baker's name has priority. The *Agave* which flowered at Lyon in the Parc de la Tête-d'Or in 1869 and was described as *A. chiapensis* by Jacobi (Abhandl. Schles. Ges. Naturw. Abth. 1870, p. 164) is another form of this species and is not the same as the original *A. chiapensis* described by Jacobi in 1866 (Hamb. Gartenz. xxii. 213).

Description.—*Shrub.* *Rosette* acaulescent or very shortly caulescent, with about 75 leaves, over 3 ft. high and nearly 6 ft. broad, emitting a few suckers and, after flowering, branching from the axils. *Leaves* about 28–29 in. long and 5–5½ in. broad in the middle, lanceolate-spathulate, erecto-patent, bright pale green, almost shining, rather stiff and hard, at the base about 2½–3 in. thick, constricted to 4 in. or less, above convex or plano-convex, towards the middle and the long point a little concave, convex at the back, especially at the base; end spine ¾–⅘ in. long and ½–2 lin. broad, straight, black-brown, when old ash-grey, above flat and broadly channelled to about the middle, on the margins decurrent into a narrow horny line which almost reaches the base and which is densely beset with minute teeth; teeth about ½ lin. long and 1 lin. distant, straight or curved. *Inflorescence* over 15 ft. high. *Scape* robust, over 6 ft. high, green mottled with brown, densely covered with numerous empty bracts, all erect, deltoid and long acuminate, the lower ones about 11 in., the upper ones about 7 in. broad. *Spike* dense and many-flowered above, 9 ft. high, and when expanded about 13–14 in. broad;

bracts similar to those of the scape and rather large, about 6–7 in. long or longer, the upper ones gradually smaller; pedicels short and thick. *Flowers* about $3\frac{1}{2}$–$3\frac{3}{4}$ in. long, with a curved tube and limb. *Perianth-lobes* broadly linear-lanceolate, obtuse, yellowish-green, outside mottled with brown or red, the outer ones more acute, the inner ones broader, about 5–$5\frac{1}{2}$ lin. wide, with a deep channel above and a fleshy keel at the back; tube obconical, 7–$7\frac{1}{2}$ lin. long, outside with six distinct furrows; stamens over 3 in. long, widely spreading, robust, violet-brown, paler at the base; anthers about $1\frac{1}{4}$ in. long. *Ovary* $1\frac{1}{2}$ in. long, somewhat triangular, smooth, green; style coloured like the stamens, at length $5\frac{1}{2}$ in. long. *Capsule* $2\frac{1}{2}$ in. long, obclavate, triquetrous; seeds black, about 3 lin. long and broad.

Fig. 1, portion of leaf-margin with teeth; 2, anther; 3, stigma; 4, sketch of an entire plant:—*all enlarged except* 4, *which is much reduced.*

M. S. del. J. N. Fitch lith

Vincent Brooks Day & Son Ltd imp.

L. Reeve & Co. London.

Tab. 8502.

PODACHAENIUM eminens.

Central America.

Compositae. Tribe Helianthoideae.

Podachaenium, *Benth. ex Oerst.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. 380.

Podachaenium eminens, *Baill. Hist. Pl.* vol. viii. p. 206 (1882); species unica.

Frutex elata; rami cinereo-tomentosi, subteretes. *Folia* opposita, ambitu suborbicularia vel late ovata, obtuse acuminata, basi in petiolum breviter vel longe cuneata, usque ad 22 cm. longa, 5–18 cm. lata, breviter 5–7-loba vel subintegra, membranacea vel tenuiter chartacea, supra subscabrido-puberula, infra cinereo-pubescentia vel subtomentosa, supra basin prominente trinervia; petioli usque ad 12 cm. longi, pubescentes. *Corymbi* terminales, laxiflori, ad 20 cm. expansi, foliosi; bracteae lineares, circiter 3 mm. longae, pubescentes; pedunculi 1–3 cm. longi, graciles, albo-tomentosi. *Capitula* 2·5–3 cm. expansa, late campanulata. *Involucri bracteae* 3-seriatae, lineares vel oblanceolatae, obtusae vel subacutae, 3–4 mm. longae, extra breviter albo-tomentosae, intus glabrae et nitidae. *Receptaculum* conicum, 2 mm. altum. *Paleae* disci corollis breviores, oblanceolatae, obtusae vel subacutae, membranaceae, carinatae, parce puberulae. *Flores radii* 9–10, patuli, albi; corollae tubus 0·75 mm. longus, puberulus; limbus oblongo-oblanceolatus, apice late emarginatus, 1 cm. longus, 4–5 mm. latus, 7-nervius, glaber; achaenia anguste obovoidea, stipitata, 3-angulata, angulis minute pubescentibus; pappi paleae circiter 5, lanceolatae, acutae, 0·75 mm. longae, glabrae; stylus exsertus, bilobus. *Flores disci* numerosi, flavi; corollae tubus subcylindricus, 1·5 mm. longus, inferne parce pubescens; lobi 5, obtuse triangulares; antherae 1 mm. longae, acutae; achaenia iis florum radii simillima; pappus rigidus, paleaceus, paleis 2 ad angulos sitis acutissimis plus minusve integris, 2 lateralibus dimidio vel ultra brevioribus latis laceratis vel 3–4-dentatis.—*Ferdinanda eminens*, Lag. Gen. et Sp. Nov. p. 31 (1816). *Podachaenium paniculatum*, Benth. ex Oerst. in Kjoeb. Vidensk. Meddel., 1852, p. 99; Hemsl. Biol. Cent.-Am. Bot. vol. ii. p. 192. *P. alatum*, Walp. Ann. vol. v. p. 230, sphalm. (1858). *Cosmophyllum cacaliaefolium*, C. Koch, Ind. Sem. Hort. Berol. 1854. p. 12; Walp. Ann. vol. v. p. 219. *Dicalymma fragrans*, Lem. Illustr. Hortic. vol. ii. Misc. 37.—J. Hutchinson.

The Composite here figured has been in continuous greenhouse cultivation for over seventy years. A native of Central America, it is met with wild at from 3,000 to 6,500 feet above sea-level from Southern Mexico to Costa Rica. The monotypic genus *Podachaenium* to which it belongs is rather closely related to *Verbesina*, Linn., but is readily distinguished by its uniformly opposite leaves and its stipitate achenes with few pappus scales. When first

described it was referred by Lagasca to *Ferdinanda*, and the erroneous name *F. eminens* is even yet frequently employed for our plant in seed-lists and garden catalogues. The plant is of vigorous growth and easy culture provided it be given a sunny and airy position. It may be propagated by seeds or by cuttings of young growths in sandy soil in a moist, warm frame. Unless frequent stopping of growths be practised the plants become somewhat straggling and unbalanced. To ensure free flowering in early spring from the leading shoots, plants should be allowed to become well pot-bound in comparatively small pots during winter.

DESCRIPTION.—*Shrub*; twigs grey-tomentose, subterete. *Leaves* opposite, suborbicular or wide ovate, bluntly acuminate, narrowed to a short or long petiole, up to 9 in. long, 2–7 in. wide, shortly 5–7-lobed or nearly entire, membranous or thinly papery, scabrid puberulous above, grey-pubescent or nearly tomentose beneath, distinctly 3-nerved above the base; petiole up to 5 in. long, pubescent. *Corymbs* terminal, lax, leafy, up to 8 in. across; bracts linear, about $1\frac{1}{2}$ lin. long, pubescent; peduncles $\frac{1}{3}$–$1\frac{1}{4}$ in. long, slender, white-tomentose. *Heads* 1–$1\frac{1}{4}$ in. across, wide campanulate. *Bracts of the involucre* 3-seriate, linear or oblanceolate, obtuse or subacute, $1\frac{1}{2}$–2 lin. long, shortly white-tomentose outside, glabrous and shining inside. *Receptacle* conical, 1 lin. deep. *Pales* of the disk shorter than the corollas, oblanceolate, obtuse or subacute, membranous, keeled, sparingly puberulous. *Ray-florets* 9–10, spreading, white, corolla-tube $\frac{1}{30}$ in. long, puberulous; limb oblong-oblanceolate, tip wide-emarginate, $\frac{1}{3}$ in. long, $\frac{1}{6}$–$\frac{1}{5}$ in. wide, 7-nerved, glabrous; achenes narrowly obovoid, stipitate, 3-angled, angles pubescent; pappus-pales about 5, lanceolate, acute, $\frac{1}{30}$ in. long, glabrous; style exserted, 2-lobed. *Disk-florets* many, yellow; corolla tube subcylindric, $\frac{1}{16}$ in. long, sparingly pubescent low down; lobes 5, bluntly triangular; anthers $\frac{1}{24}$ in. long, acute achenes as in the ray-florets; pappus-paleae rigid, 2 at the angles acute and nearly entire, 2 lateral much shorter, wide and lacerate or 3–4-toothed.

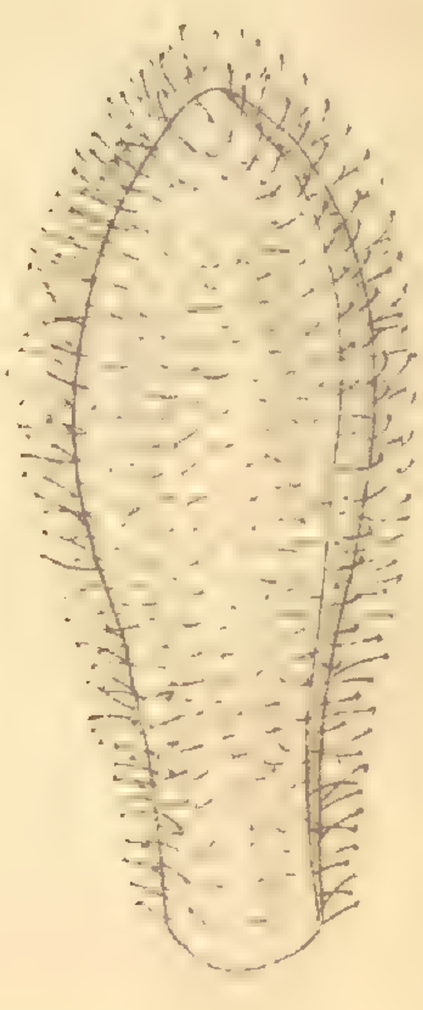
Fig. 1, portion of under surface of leaf; 2, flower-head; 3, bract of the involucre; 4, ray-floret; 5, achene; 6, scale of the receptacle; 7, disk-floret; 8, anthers; 9, style-arms:—*all enlarged.*

3

5

2

4



1

M.S. del, J.N. Fitch lith

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Tab. 8503.

SEDUM pilosum.

Caucasus and Armenia.

Crassulaceae.

Sedum, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 659.

Sedum pilosum, *Bieb. Fl. Taur.-Cauc.* vol. i. p. 352, *et Cent. Plant. Rar.* t. 40; *DC. Prodr.* vol. iii. p. 406; *Boiss. Fl. Orient.* vol. ii. p. 786; *Irving in Gard. Chron.* 1911, vol. xlix. p. 317, fig. 16; affinis *S. sempervivoidi*, Fisch., sed foliis multo angustioribus oblongis vel oblanceolatis et petalis obtusis vel subacutis (nec longe acutis) pulchre roseis facile distinguitur.

Herba succulenta, 5–7 cm. alta, glanduloso-pubescens. *Folia* 5–10 mm. longa, 2–5 mm. lata, oblonga vel oblanceolato-oblonga, obtusa; radicalia dense rosulata; caulina alterna, sublaxa vel conferta, patula. *Flores* in cymam corymbosam 2–4 cm. diametro conferti. *Pedicelli* 2–5 mm. longi. *Sepala* erecta, 3·5–4 mm. longa, 1·5–1·75 mm. lata, oblonga, subacuta vel obtusa. *Petala* erecta, apice recurva, 6–7 mm. longa, 2·5–3 mm. lata, elliptico-lanceolata, obtusa vel subacuta, basi in unguem latum angustata, glabra, pulchre rosea. *Stamina* 3–4 mm. longa, glabra; antherae rubrae. *Carpella* 4 mm. longa, inferne compresso-ovoidea, superne in stylum 1 mm. longum attenuata.—*Umbilicus pubescens*, Ledeb. Fl. Ross. vol. ii. p. 175. *Cotyledon pubescens*, C. A. Mey. Verzeich. Pflanz. Cauc. p. 150.—**N. E. Brown.**

The pleasing little biennial Stonecrop which forms the subject of our figure is one of the most charming members of its genus, from all others of which it is readily distinguished by its beautiful rosy flowers. In *Sedum sempervivoides*, Fisch., which has already been figured at t. 2474 of this work, and to which *S. pilosum* is most nearly allied, the flowers are deep red, and there are several other species in which the petals are purple. But except in *S. pilosum* we do not in the genus *Sedum* find the rich rosy colour which the petals of our plant possess. In this regard and in their shape and general facies the flowers of *S. pilosum* bear a greater resemblance to those of a *Crassula* than to those of a *Sedum*, though the number of the stamens and the disposition of the leaves prove conclusively that it is to the latter, not the former genus that our plant must be referred. A native of the Caucasus, where it affects exposed localities at heights of from 4,000 to 5,000 feet above

sea-level, *S. pilosum* is quite hardy in this country when grown in well-drained, sunny situations in a stony soil. The plant from which our figure has been prepared is one which was received at Kew from the Burton Hardy Plant Company early in 1911. It had been raised, as were other plants already in cultivation but not yet in flower at Kew when this plant arrived, from seed sent to England in 1910 by Messrs. Regel & Kesselring of St. Petersburg.

DESCRIPTION.—*Herb*, succulent, 2–3 in. high, glandular-pubescent. *Leaves* $\frac{1}{5}$–$\frac{2}{5}$ in. long, $\frac{1}{12}$–$\frac{1}{5}$ in. wide, oblong or oblanceolate-oblong, obtuse, radical densely rosulate, cauline alternate, spreading, rather close together. *Flowers* clustered in a corymbose cyme $\frac{3}{4}$–$1\frac{1}{2}$ in. across; pedicels $\frac{1}{12}$–$\frac{1}{5}$ in. long. *Sepals* erect, $\frac{1}{7}$–$\frac{1}{6}$ in. long, oblong, subacute or obtuse. *Petals* erect with recurved tips, $\frac{1}{4}$ in. long, $\frac{1}{10}$–$\frac{1}{8}$ in. wide, elliptic-lanceolate, obtuse or subacute, narrowed below into a broad claw, glabrous, rose-pink. *Stamens* $\frac{1}{8}$–$\frac{1}{6}$ in. long, glabrous; anthers red. *Carpels* $\frac{1}{6}$ in. long, below compressed-ovoid, narrowed upwards into the short style.

Fig. 1, a leaf; 2, a flower; 3, a petal; 4, a stamen; 5, carpels with hypogynous glands:—*all enlarged*.

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Ltd. imp.

Tab. 8504.

CUNONIA capensis.

South Africa.

Saxifragaceae. Tribe Cunonieae.

Cunonia, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 654.

Cunonia capensis, *Linn. Syst.* ed. x. p. 1025; *Lindl. in Bot. Reg.* vol. x. t. 828; *DC. Prodr.* vol. iv. p. 12; *Rev. Hort.* 1854, t. 8; *Fl. Cap.* vol. ii. p. 306; *Sim, For Fl. Cape Col.* t. 66; affinis *C. Viellardi,* Brogn. et Gris, sed floribus stipulis et foliis majoribus, foliolis numerosioribus, racemis longioribus et stylis elongatis differt.

Arbor sempervirens, in cultu 4–5 m. altus. *Folia* opposita, longipetiolata, in toto ad 23·5 cm. longa, imparipinnata, foliolis lateralibus 4 vel 6 spathulato-oblongis terminalibus oblanceolatis apice acutis basi cuneatis in petiolulum attenuatis 6·5–10 cm. longis, 2–3 cm. latis glanduloso-serratis coriaceis glabris supra atro-viridibus nitidis subtus pallidioribus; petioluli 0·2-1 cm. longi; petioli 4–5·5 cm. longi, rubiginosi; stipulae spathulatae, interpetiolares, folia novella includentes. *Flores* in racemos densifloros axillares dispositi; pedicelli 5–7 mm. longi, fasciculati. *Calycis lobi* 5, virides, ovati, 1·5 mm. longi, decidui, imbricati. *Petala* 5, luteola, oblonga, 3 mm. longa, 1·5 mm. lata, apice obtusa, margine erosa. *Stamina* 10, longe exserta; filamenta complanata, 6–7 mm. longa; antherae parvae. *Ovarium* glabrum, biloculare; styli 2, quam petala longiores.—*Oosterdykia floribus spicatis, pentapetalis, foliis oblongis, subincanis serratis,* Burm. Pl. Afr. t. 96. *O. capensis,* Crantz, Inst. vol. ii. p. 452.—J. J. Clark.

So far as is at present known, the subject of our illustration, the Umqwashube of the Kaffirs or Red Alder of European settlers in South Africa, is the only African representative of the genus *Cunonia*, the other members of which, some ten in number, are confined to New Caledonia. While fairly abundant in the forest tracts of South-Eastern Africa, where it is a tree reaching a height of some fifty feet, *C. capensis* is hardly entitled to be considered a forest tree, because it is rarely to be met with except on the fringes of forest tracts. The wood is valuable, being as hard as boxwood, resistant to fire and durable in water; it is besides of a rich red colour and is very handsome when polished. The scarcity of the tree, however, prevents the extensive use of the wood. There used to be large plants of *C. capensis* in various conservatories in the United Kingdom, notably a fine example at Syon where it grew well and

flowered every year, and another at Bicton which throve so vigorously as to require severe pruning to keep it within bounds. At Kew it is grown in the Temperate House, but has never flowered satisfactorily, probably owing to its need for more direct sunlight than it there enjoys. The material for our figure was obtained from a specimen in the Botanic Garden of Trinity College, Dublin, with the history of which the name of Dr. Harvey, the well-known authority on the flora of South Africa, is inseparably associated, though, as Professor Dixon informs us, there is no particular record connected with the Dublin plant, which is grown in a cool greenhouse in the usual loam to which some peat has been added, and flowers every year. The flowers are fragrant.

Description.—*Tree,* evergreen, in conservatories 12–15 ft. high, in a wild state up to 50 ft. high. *Leaves* opposite, long-petioled, unequally pinnate, up to 9 in. long, lateral leaflets 4 or 6, spathulate-oblong, terminal oblanceolate, acute at the apex, cuneate and narrowed into the petiolule at the base, $2\frac{1}{2}$–4 in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. wide, glandular-serrate, coriaceous, glabrous, dark green and shining above, paler beneath; petiolules short or very short; petioles $1\frac{1}{2}$–$2\frac{1}{4}$ in. long, reddish; stipules spathulate, interpetiolar, enveloping the new shoots. *Flowers* in dense axillary racemes; pedicels about $\frac{1}{4}$ in. long, clustered. *Calyx* 5-lobed; lobes green, ovate, deciduous, imbricate, very small. *Petals* 5, yellowish, oblong, $\frac{1}{8}$ in. long, obtuse, erose. *Stamens* 10, far exserted; filaments flattened, $\frac{1}{4}$ in. long; anthers small. *Ovary* glabrous, 2-celled; styles 2, longer than the petals.

Fig. 1, a flower; 2 and 3, stamens; 4, pistil:—*all enlarged.*

L.N.Fitch lith

Vincent Brooks, Day & Son Ltd imp

L. Reeve & C.B London.

TAB. 8505.

CROTALARIA AGATIFLORA.

East Tropical Africa.

LEGUMINOSAE. Tribe GENISTEAE.

CROTALARIA, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 53.

Crotalaria agatiflora, *Schweinf. ex Engl. in Abhandl. Preuss. Akad. Wiss.* 1891, vol. ii. p. 244, *et in Hoehnel, zum Rudolph See,* Append. p. 13; affinis *C. laburnifoliae,* Linn., sed racemis multo robustioribus et longioribus, floribus duplo majoribus distinctissima.

Frutex circa 1 m. altus; rami glabri vel ad apices puberuli, virides. *Folia* alterna, exstipulata, 3-foliolata, glabra vel subtus puberula; petioli 3–10 cm. longi; petioluli 2–3 mm. longi; foliola 2·5–7 cm. longa, 1·6–4 cm. lata, ovata, acuta, basi late cuneata vel cuneato-rotundata. *Racemi* terminales 20–35 cm. longi. *Bracteae* caducissimae, 1·5–2·5 cm. longae, 0·5–1·6 cm. latae, lanceolatae vel ovato-lanceolatae, acuminatae, concavae, dorso puberulae vel glabrae. *Pedicelli* superne obconico-incrassati; parte inferiore gracili 1 cm. longo viridi prope basin minute bibracteolato; parte incrassato sordide brunneo-purpureo leviter glauco. *Calyx* 3-lobus, glaber, viridis, leviter glaucus; lobi laterales 13–14 mm. longi, 7–8 mm. lati, lanceolati, acuti; lobus anticus 17 mm. longus, basi 4–5 mm. latus, in apicem tenuissimum attenuatus. *Corolla* maxima, glabra, pallide viridi-lutea, carina apice sordide fusco-purpurea; vexillum 4 cm. longum, 3 cm. latum, ovatum, subacutum, basi in unguem 8 mm. longum abrupte contractum; alae lamina 2–2·5 cm. longa, 0·9–1 cm. lata, basi in unguem 9 mm. longum abrupte contracta; carina longe acuminata, 4–4·5 cm. longa, 1·8 cm. lata. *Stamina* basi monadelphia, parte libera 2·5–3·5 cm. longa. *Stylus* 5·5 cm. longus, ad apicem staminum vaginae abrupte incurvatus. *Legumen* stipitatum, turgido-cylindricum, 6 cm. longum, 1·8 cm. crassum; stipes 1·3–1·5 cm. longus.—N. E. BROWN.

The *Crotalaria* here figured, one of the finest and one of the largest-flowered of the African species of this genus, is a native of Uganda and British East Africa, and throughout this area appears to be rather widely spread and fairly common. It forms in a wild state a large, handsome shrub with numerous long racemes of large greenish-yellow but nevertheless brightly coloured flowers. It is closely allied to the more familiarly known *C. laburnifolia,* Linn., but its larger leaflets are more acute, the peduncle of its raceme is much longer and stouter and the flowers are very much larger. The plant has been grown for the first

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time in this country in the garden of Mr. Ingham Whitaker at Pylewell Park, Lymington, by Mr. W. F. Hamilton, by whom a spray was submitted for identification in November, 1912, followed later by further material which has admitted of the preparation of our plate. Under greenhouse conditions the species has thriven well and flowered freely under Mr. Hamilton's care.

DESCRIPTION.—*Shrub*, about 3 ft. high; branches glabrous, or puberulous towards the tips, green. *Leaves* alternate, exstipulate, 3-foliolate, glabrous or puberulous on the lower surface; petioles $1\frac{1}{4}$–4 in. long; petiolules $\frac{1}{10}$ in. long; leaflets 1–$2\frac{3}{4}$ in. long, $\frac{2}{3}$–$1\frac{1}{4}$ in. wide, ovate, acute, wide cuneate or cuneately rounded at the base. *Racemes* terminal, 8–14 in. long; bracts very caducous, $\frac{2}{3}$–1 in. long, $\frac{1}{3}$–$\frac{2}{3}$ in. wide, lanceolate or ovate-lanceolate, acuminate, concave, puberulous outside or glabrous; pedicels obconically thickened upwards, slender below, green, minutely 2-bracteolate near the base, the upper thickened portion dull brownish-purple, faintly glaucous. *Calyx* 3-lobed, glabrous, green, slightly glaucous; lateral lobes over $\frac{1}{2}$ in. long, $\frac{1}{3}$ in. wide, lanceolate, acute; anterior lobe $\frac{2}{3}$ in. long, $\frac{1}{6}$–$\frac{1}{3}$ in. wide at the base, narrowed above into a very slender tip. *Corolla* very large, glabrous, pale greenish-yellow, keel dull brownish-purple at the tip; standard $1\frac{1}{2}$ in. long, $1\frac{1}{4}$ in. wide, ovate, subacute, base abruptly narrowed into a claw $\frac{1}{3}$ in. long; wings $\frac{3}{4}$–1 in. long, $\frac{1}{3}$ in. wide, base abruptly contracted into a claw over $\frac{1}{3}$ in. long; keel long acuminate, $1\frac{1}{2}$–$1\frac{3}{4}$ in. long, $\frac{2}{3}$ in. wide. *Stamens* monadelphous below, the free portion 1–$1\frac{1}{3}$ in. long. *Style* $2\frac{1}{4}$ in. long, abruptly incurved at the top of the staminal sheath. *Pod* stipitate, turgid-cylindric, $2\frac{1}{3}$ in. long, $\frac{2}{3}$ in. thick; stipe over $\frac{1}{2}$ in. long.

Fig. 1, a flower, part of the calyx and vexillum removed; 2, a flower with all the petals removed; 3, pistil:—*all very slightly enlarged.*

M.S.del, J.N.Fitch lith

Vincent Brooks, Day & Son Ltd. imp

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VINCA difformis.

South Europe and North Africa.

Apocynaceae. Tribe Plumerioideae.

Vinca, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 703.

Vinca difformis, *Pourr. in Mém. Acad. Toul.* vol. iii. p. 333; *Rouy, Fl. France,* vol. x. p. 226; *Coutinho, Fl. Portug.* p. 485; species *V. majori,* Linn., arcte affinis sed foliis basi minus late rotundatis vel breviter attenuatis, ciliatis, floribus paulo minoribus, sepalis glabris brevioribus, corollae segmentis superne minus latis distincta.

Suffrutex humilis, sempervirens ramis sterilibus prostratis florentibus ascendentibus. *Folia* ovata e basi rotundata vel breviter acuta, apice obtusa vel subacuta, 3–7 cm. longa, 2·5–4·5 cm. lata, glaberrima; petiolus 5–8 mm. longus. *Flores* in foliorum superiorum axillis solitarii; pedicelli 1–4 cm. longi. *Sepala* linearia, paulo supra basin utrinque glandula munita, 5–10 mm. longa, raro longiora. *Corolla* coerulea; tubi pars infrastaminalis cylindrica, 4–5 mm. vel raro 6 mm. longa, pars suprastaminalis infundibuliformis, 9–13 mm. longa; limbi segmenta oblique obovata, 12–20 mm. longa, 7–13 mm. lata.—*V. media,* Hoffg. et Link, Fl. Portug. vol. i. p. 376, t. 70. *V. acutiflora,* Bertol. Fl. Ital. vol. ii. p. 751.—O. Stapf.

The Periwinkle which forms the subject of our plate is a native of the Western and Central Mediterranean region from Portugal to Italy and Algeria, where it is to be met with in moist and shady places, mostly in hedges and woods. According to Dr. Schneider it is extremely rarely met with in cultivation. The plant which yielded the material for our illustration is one which was presented to Kew by Canon Ellacombe, in whose garden at Bitton the species has long been grown. It is a dwarf shrublet of the easiest cultivation where the climate is sufficiently warm for its constitution, but it is not so hardy as the two species, *V. major*, Linn., and *V. minor*, Linn., which are most commonly met with in English gardens. The plant figured had been grown in the open air, but as it was thickly set with flower buds in November, 1912, it was taken up, potted, and placed in a greenhouse. From then until February, 1913, it kept up a continuous succession of flowers,

and the species therefore promises to be of value for greenhouse decoration during what are the dullest months of the year. According to Dr. Coutinho a variety *bicolor*, characterised by having a white centre to the corolla, has been met with in Southern Portugal. The species is very readily increased by means of firm, woody cuttings.

DESCRIPTION.—*Undershrub*, evergreen and dwarf, with prostrate leafy branches and ascending flowering twigs. *Leaves* ovate, base rounded or shortly cuneate, apex subacute or obtuse, $1\frac{1}{4}$–$2\frac{3}{4}$ in. long, 1–$1\frac{3}{4}$ in. wide, quite glabrous; petiole $\frac{1}{5}$–$\frac{1}{3}$ in. long. *Flowers* solitary in the axils of the uppermost leaves; pedicels $\frac{1}{3}$–$1\frac{1}{2}$ in. long. *Sepals* linear, with a gland on each side a little above the base, $\frac{1}{5}$–$\frac{2}{5}$ in. long or occasionally longer. *Corolla* blue, the portion of the tube below the stamens cylindric $\frac{1}{6}$–$\frac{1}{5}$ rarely $\frac{1}{4}$ in. long, the portion of the tube above the stamens funnel-shaped $\frac{1}{3}$–$\frac{1}{2}$ in. long; segments of the limb obliquely obovate, $\frac{1}{2}$–$\frac{3}{4}$ in. long, $\frac{1}{4}$–$\frac{1}{2}$ in. across.

Fig. 1, section of calyx; 2, corolla tube, laid open; 3 and 4, stamens; 5, part of the style, with stigma:—*all enlarged.*

M.S. del, J.N Fitch lith.

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Tab. 8507.

STANHOPEA convoluta.

Colombia.

Orchidaceae. Tribe Vandeae.

Stanhopea, *Frost*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 549.

Stanhopea convoluta, *Rolfe in Kew Bulletin*, 1909, p. 366; species *S. tricorni*, Lindl., affinis, differt floribus majoribus, mesochilii cornubus oblongis obtusis nec acuminatis epichilio duplo brevioribus.

Herba epiphytica. *Pseudobulbi* ovoidei vel ovoideo-oblongi, obscure 5-angulati, circiter 5 cm. longi. *Folia* petiolata, elliptica vel elliptico-oblonga, breviter et abrupte acuminata, 5–7-nervia, 30–35 cm. longa, 9–14 cm. lata, petioli circiter 8 cm. longi. *Scapi* breves, vaginis ovatis imbricatis obtecti, biflori. *Bracteae* spathaceae, elliptico-oblongae, subacutae, convolutae, 6 cm. longae. *Pedicelli* 7 cm. longi. *Sepala* subpatentia, elliptico-oblonga, concava, apice recurva et subacuta, 6·5–7 cm. longa, 3·5–4 cm. lata. *Petala* conniventia, columnam involventia, ovata, concava, subacuta, 5 cm. longa, 3 cm. lata. *Labellum* trilobum, carnosissimum, 4 cm. longum; hypochilium subglobosum, 22 cm. latum, basi utrinque angulatum vel cornu obtuso, mesochilium breve, esulcatum, bicornutum, antice gibbosum, cornubus incurvis oblongis obtusis 1 cm. longis; epichilium oblongum, truncatum, 2 cm. longum, 1 cm. latum. *Columna* incurva, 4 cm. longa, subito et late alata.—R. A. Rolfe.

The striking *Stanhopea* of which a figure is here given is a native of Colombia, where it was first discovered in the province of Antioquia and whence it was first imported by Mr. F. Claes, in whose establishment at Etterbeek, Brussels, it flowered in September, 1909. The plant from which the material for our illustration was obtained is one that was presented to the Kew collection by Messrs. Charlesworth & Co., Haywards Heath, in 1911. It flowered at Kew in October, 1911, and again in October, 1912. It has thriven well under the conditions suitable for other members of the genus, which is fairly extensively represented in the collections of orchid-growers in this country. These conditions involve a plentiful supply of water when the plants are in growth, absolute drought for about three months while they are at rest, and a position in an intermediate house near the glass. *S. convoluta* is, as Mr. Rolfe points out, most nearly allied to *S. tricornis*, Lindl., but it has larger flowers, and there are differences, which he has detailed, in the structure of the lip.

August, 1913.

DESCRIPTION.—*Herb*, epiphytic. *Pseudobulbs* ovoid or ovoid-oblong, obscurely 5-angled, about 2 in. long. *Leaves* petioled, elliptic or elliptic-oblong, shortly abruptly acuminate, 5–7-nerved, 12–14 in. long, $3\frac{1}{2}$–$5\frac{1}{2}$ in. wide; petiole about 3 in. long. *Scapes* short, 2-flowered, clothed with ovate, imbricate sheaths; bracts spathaceous, elliptic-oblong, subacute, convolute, $2\frac{1}{4}$ in. long; pedicels nearly 3 in. long. *Sepals* somewhat spreading, elliptic-oblong, concave, recurved and subacute at the tip, $2\frac{1}{2}$–$2\frac{3}{4}$ in. long, $1\frac{1}{2}$–$1\frac{3}{4}$ in. wide. *Petals* connivent, enveloping the column, ovate, concave, subacute, 2 in. long, $1\frac{1}{4}$ in. wide. *Labellum* 3-lobed, very fleshy, $1\frac{1}{2}$ in. long; hypochile subglobose, over $\frac{3}{4}$ in. wide, angled at the base, or with a blunt horn on both sides; mesochile short, not channelled, 2-horned, gibbous in front, the horns incurved, oblong, obtuse, over $\frac{1}{3}$ in. long; epichile oblong, truncate, $\frac{3}{4}$ in. long, over $\frac{1}{3}$ in. wide.

Fig. 1, lip; 2, column; 3, anther-cap; 4, pollinarium; 5, sketch of an entire plant:—*all enlarged except* 5, *which is much reduced.*

M.S. del J. N. Fitch lith.

Vincent Brooks Day & Son Ltd imp.

Tab. 8508.

CENTAUREA crassifolia.

Malta.

COMPOSITAE. Tribe CYNAROIDEAE.

CENTAUREA, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 477.

Centaurea crassifolia, *Bertol. in Ann. Stor. Nat.* vol. ii. p. 359; *Fl. Ital.* vol. ix. p. 428; *DC. Prodr.* vol. vi. p. 601; species foliis carnosis involucri bracteis inappendiculatis valde distincta.

Suffrutex usque ad 50 cm. alta, parce ramosa; caulis dense foliatus, teres, glaber. *Folia* elongato-spathulata, apice rotundata, breviter mucronata, basi longe attenuata, 6–9 cm. longa, 0·75–2·5 cm. lata, integra, crassa, glabra, nervis lateralibus utrinque 3–4 ascendentibus distinctis. *Capitula* in ramis elongatis 3–4-natis disposita, circiter 4·5 cm. expansa; pedunculi elongati, usque ad 35 cm. longi, parce bracteati, longitudinaliter sulcati, circiter 2 mm. diametro, apicem versus leviter incrassati et angulati, glabri; bracteae lineares, subfoliaceae. *Involucrum* ellipsoideo-globosum, apice constrictum, 2 cm. longum, medio 2 cm. latum. *Involucri bracteae* 6–7-seriatae, apicem versus gradatim longiores, obtusae, exteriores ovato-lanceolatae, circiter 3 mm. longae, 2 mm. latae, rigide coriaceae, glabrae; interiores lineares, fere 2 cm. longae, 2·5 mm. latae, quam interiores tenuiores. *Receptaculum* dense setosum, setis albescentibus circiter 1 cm. longis glabris. *Flores* numerosi, purpurei rosei vel albi (*Rouy*). *Corollae* tubus leviter arcuatus, gracilis, 1·5 cm. longus, superne gradatim expansus, glaber; lobi lineares, obtusi, 7–8 mm. longi. *Antherae* 8 mm. longae; filamenta puberula. *Pappus* biseriatus; setae exteriores breves, 1·5–3 mm. longae, barbellatae, interiores usque ad 7 mm. longae, etiam minute barbellatae. *Achaenia* oblonga, 3 mm. longa, glabra. *Stylus* longe exsertus.—*Centaurea nitida*, Nald. ex Bertol. Fl. Ital. vol. ix. p. 428. *C. spathulata*, Zerafa Fl. Melit. vol. i. p. 11, non Ten. *Serratula spathulata*, Janka ex Rouy Ill. Pl. Europ. Rar. p. 5, t. xiv.; Rev. Bot. Syst. 145, t. 4.—J. HUTCHINSON.

The attractive Composite here figured is endemic in Malta, where, according to Rouy, it is met with mainly in the central portion of the island, more especially in the gorges of Wied-Baba near Zurrico and of Wied-Mokbel. For its introduction to collections in this country we are indebted to Professor G. Henslow, who sent a plant from Malta to the Cambridge Botanic Garden in 1894. When at a later date the Cambridge plant was lost, it was replaced by one from the garden of the late Sir Thomas Hanbury at La Mortola. From this plant came the material, sent by Mr. Lynch at the request of Professor Henslow, from which our drawing has been prepared. At Cambridge, Mr. Lynch

informs us, it has thriven well in the Succulent house under conditions suitable for species of *Sempervivum* and similar plants. It is not difficult to grow, and in sandy loam in not too large a pot it will flourish for several years. Owing, however, to the liability of old plants to die it is desirable to keep a second and younger specimen in reserve. It is readily propagated by means of cuttings. The fleshy leaves and the absence of appendages to the involucral bracts render this species a distinct and well-marked one. But while there is no question as to this, its generic position has been disputed; some authorities, among them Mr. Rouy, regard it as a *Serratula*; others, whom we prefer to follow, accept the view of Professor Bertolini and treat it as a *Centaurea*.

DESCRIPTION.—*Undershrub* up to 2 ft. high, sparingly branched, stem densely leafy, round, glabrous. *Leaves* long-spathulate, obtuse, much narrowed to the base, $2\frac{1}{4}$–$3\frac{1}{2}$ in. long, $\frac{1}{3}$–1 in. wide, entire, thick, glabrous; lateral nerves 3–4 on each side, ascending, distinct. *Heads* 3–4-nate, nearly 2 in. wide when open, on long branches; peduncles elongated, up to 14 in. long, sparingly bracteate, longitudinally channelled, about $\frac{3}{4}$ in. thick, slightly swollen and angled towards the top, glabrous; bracts linear, somewhat leafy. *Involucre* ellipsoid-globose, narrowed at the tip, $\frac{3}{4}$ in. long, in the middle $\frac{3}{4}$ in. across. *Involucral bracts* 6–7-seriate, gradually increasing in length upwards, blunt, the outermost ovate-lanceolate, about $1\frac{1}{2}$ lin. long, 1 lin. wide, firmly coriaceous, glabrous, the innermost more membranous, linear, nearly $\frac{3}{4}$ in. long, over 1 lin. wide. *Receptacle* densely setose; setae whitish, about $\frac{1}{3}$ in. long, glabrous. *Flowers* purple, rarely rosy or white. *Corolla-tube* slightly curved, slender, nearly $\frac{2}{3}$ in. long, slightly widened upwards, glabrous; lobes linear, obtuse, nearly $\frac{1}{3}$ in. long. *Anthers* $\frac{1}{3}$ in. long, filaments puberulous. *Pappus* 2-seriate; outer setae short, $\frac{1}{8}$ in. long, inner larger, over $\frac{1}{4}$ in. long, all more or less barbellate. *Achenes* oblong, $\frac{1}{8}$ in. long, glabrous. *Style* far exserted.

Fig. 1, part of receptacle showing setae; 2, flower; 3, pappus setae; 4, anthers; 5, style-arms; 6, base of style:—*all enlarged.*

M.S.del.J.N.Fitch lith.

Vincent Brooks Day & Son Lt.d imp

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Tab. 8509.

CYTISUS supranubius.

Canaries.

Leguminosae. Tribe Genisteae.

Cytisus, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 484.

Cytisus supranubius, *O. Kuntze Rev. Gen. Plant.* vol. i. p. 177; *Briquet, Cytises Alpes Marit.* p. 152; *Ascherson et Graebner, Syn. Mittel-Europ. Fl.* vol. vi. 2, p. 299; species insignis ab affini *C. filipede,* Webb, calyce parum longiore, carina magis recurva distinguenda.

Frutex ramis satis robustis erectis striatis primo pilis albis adpressis laxe tectis mox glabris. *Folia* trifoliolata, petiolo usque ad 4 mm. longo suffulta; foliola ex lineari-lanceolata ad anguste oblanceolata, apice acuta vel obtusa, basi cuneata, petiolo plerumque subaequilonga, pagina utraque pubescentia. *Flores* laterales, breviter pedicellati, pedicellis calyceque adpresse hirsutis. *Calyx* sub-bilabiatus, tubuloso-campanulatus, supra gibbus; tubus 3 mm. longus; labium superius e dentibus duobus brevibus deltoideis acutis, inferius subporrectum, e dentibus tribus acutis mediano 0·75 mm. longo lateralibus longiore constitutum. *Corolla* glabra; vexillum oblongo-obovatum, apice retusum, basi auriculatum, 1 cm. longum, 0·5 cm. latum, ungui 3 mm. longo suffultum; alae circiter 9 mm. longae et 3·5 mm. latae, ungui 3·75 mm. longo adjecto; carina obtusa, basi auriculata, 6·5 mm. longa, 2·5 mm. lata, ungui 4 mm. longo suffulta. *Stamina* monadelpha. *Ovarium* lineare, complanatum, basi attenuatum, glabrum, multi-ovulatum; stylus filiformis, stigmate capitato papillato. *Legumen* compressum, plerumque circiter 2·8 cm. longum et 5 mm. latum, fuscum. *Semina* nigra, subovata, 3·5 mm. longa, arillo crassiusculo pallidiore margine crenulato.—*Spartium supranubium,* Linn. f. Suppl. Pl. Syst. p. 339. *Genista supranubia,* Spach. in Ann. Sc. Nat. sér. 3, vol. iii. p. 155. *Spartocytisus supranubius,* Christ; Schenck, Beitr. z. Kenntn. d. Veg. d. Canar. Inseln. p. 386. *Spartium nubigenum,* L'Herit. Stirp. Nov. p. 183; Ait. Hort. Kew. ed. i. vol. iii. p. 13. *Cytisus nubigenus,* Link. Enum. Hort. vol. ii. p. 240. *Genista nubigena,* Link. in Buch. Phys. Beschr. Canar. Ins. p. 156. *Spartocytisus nubigenus,* Webb in Webb et Berth. Phyt. Canar. vol. ii. p. 50; Pitard et Proust, Les Isles Canar. Fl. p. 153. *Cytisus fragrans,* Lamk. Encycl. Meth. vol. ii. p. 248. *Genista fragrans,* Spach in Ann. Sc. Nat. sér. 3, vol. iii. p. 155. *Nubigena tenerifa,* Rafin. Sylv. tellur. p. 25.—W. G. Craib.

The subject of our illustration, which is an endemic species in the Canaries, is, according to Dr. Schenck, the most characteristic plant of the Alpine region of Teneriffe, where it is abundant between 6,000 and 9,000 feet above sea-level, and is to be met occasionally even at 10,000 feet. Here it forms a compact globular bushy shrub about five feet in height, and nearly as much across. Dr. Christ, in consequence of its peculiarly characteristic nature, speaks of it as the "Alpenrose," or the "Krummholz" of the Peak.

August, 1913.

As the synonymy cited above indicates, there has been considerable diversity of view as regards the generic position of this plant, though it seems clear that there is no justification for either of the two rival views which have found most favour, and that the species cannot be considered a *Spartium* or a *Genista*. There is more to be said in favour of the view that this endemic species represents a distinct generic type, but although in habit it is more suggestive of a *Retama*, Mr. Craib considers that, in the present state of our knowledge, it is preferable to follow Dr. Briquet and retain the plant in the genus *Cytisus*. The material from which our figure has been prepared was sent by Sir F. Moore from the Royal Botanic Garden, Glasnevin, where it is grown against a wall. Like other Brooms, that of the Peak of Teneriffe is a lover of the sun, and though not hardy in the open ground in most parts of this country, might well succeed on a sunny wall. At Glasnevin it flowers in May, and is very striking in its long wands of creamy white blossom. It should be propagated by seeds.

DESCRIPTION.—*Shrub*, branches rather stout, erect, striate, at first loosely clothed with white hairs, soon glabrous. *Leaves* 3-foliolate, with petioles $\frac{1}{6}$ in. long; leaflets linear-lanceolate to narrow-oblanceolate, acute or obtuse, cuneate at the base, usually about as long as the petiole, pubescent on both surfaces. *Flowers* lateral, shortly pedicelled, pedicels adpressed hairy. *Calyx* almost 2-lipped, tubular-campanulate, gibbous above, adpressed-hairy; tube $\frac{1}{8}$ in. long; upper lip with 2 short, acute, deltoid teeth; lower lip somewhat spreading, 3-toothed, the central tooth the longest. *Corolla* glabrous; standard oblong-obovate, retuse, auricled below, $\frac{1}{3}$ in. long, $\frac{1}{6}$ in. wide, claw $\frac{1}{8}$ in. long; wing-petals $\frac{1}{3}$ in. long, $\frac{1}{7}$ in. wide, claw $\frac{1}{6}$ in. long; keel blunt, auricled below, $\frac{1}{4}$ in. long, $\frac{1}{10}$ in. wide, claw $\frac{1}{6}$ in. long. *Stamens* monadelphous. *Ovary* linear, flattened, narrowed to the base, glabrous, many-ovuled; style filiform; stigma capitate, papillose. *Pod* compressed, usually over 1 in. long, $\frac{1}{5}$ in. wide, brown. *Seeds* black, almost ovate, $\frac{1}{7}$ in. long; arillus rather thick and pale, its margin crenulate.

Fig. 1, a flower, petals removed; 2, vexillum; 3, wing-petal; 4, keel; 5, pistil; 6, ovary, laid open; 7, part of a fruiting branch; 8 and 9, seed:—*all enlarged except* 7 *and* 8, *which are of natural size.*

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M.S. del J.N. Fitch lith

Vincent Brooks, Day & Son Lt.d imp.

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TAB. 8510.

GREVILLEA BIPINNATIFIDA.

West Australia.

PROTEACEAE. Tribe GREVILLEEAE.

GREVILLEA, *R. Br.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 180.

Grevillea bipinnatifida, *R. Br. Prot. Nov.* p. 23; *Meisn. in Pl. Preiss.* vol. i. p. 541, *et in DC. Prodr.* vol. xiv. p. 376; *Benth. Fl. Austral.* vol. v. p. 439; species foliis bipinnatifidis racemis secundis laxis floribus magnis distincta.

Frutex diffusus vel prostratus, circiter 1 m. altus; rami subflexuosi, costati, appresse tomentosi vel fere glabri, internodi plerumque 3–4 cm. longi. *Folia* bipinnatifida, petiolata, 7–15 cm. longa (petiolo incluso), 9–12 cm. lata, viridia, supra glabra, reticulata, infra parce pilosa vel glabra; lobi utrinque 5–10, pinnatilobi vel rarius grosse dentati, lobis ovato-triangularibus abrupte longe spinoso-acuminatis margine cartilagineis; petioli usque ad 5 cm. longi, anguste alati. *Racemi* solitarii vel plures in paniculo terminali dispositi, secundi, ad 15 cm. longi; rhachis pubescens vel tomentosa; pedicelli mox reflexi, 6–10 mm. longi, molliter pubescentes vel tomentosi. *Perianthium* rubrum, extra molliter pubescens, intra subglabrum; tubus 0·7–1·2 cm. longus, infra medium dilatatus et subgibbosus, sub limbo attenuatus et revolutus; limbus late ovatus, apice mucronatus, inflexus. *Antherae* 1·5 mm. longae. *Glandula* transverse oblonga, carnosa, glabra. *Ovarium* sessile, obliquum, tomentosum; stylus longe exsertus, 3–4·5 cm. longus, breviter pubescens; discus stigmaticus late obliquus.—J. HUTCHINSON.

The *Grevillea* now figured, *G. bipinnatifida*, R. Br., is a native of rocky localities in the neighbourhood of the Swan River in Western Australia, and among the many species of the genus in cultivation in Europe it is one of the most ornamental, not only on account of the beauty of its flowers, but also because of the charm of its foliage. The species is perhaps most closely related to *G. Gaudichaudii*, R. Br., and to *G. acanthifolia*, A. Cunn., both of which are natives of and endemic to New South Wales, and therefore geographically widely separated from our plant. Neither of these eastern species is so attractive as *G. bipinnatifida*. The material for our plate has been derived from a plant which was raised from seed received at Kew in 1909 from the Adelaide Botanic Garden. This plant is now a shrub some three feet high and leafy to the base. The first flowers appeared in December, 1912.

AUGUST, 1913.

DESCRIPTION.—*Shrub*, spreading or prostrate, about 3 ft. high; branches somewhat flexuous, costate, adpressed hairy or nearly glabrous. *Leaves* 2-pinnatifid, petioled, usually $1\frac{1}{4}$–$1\frac{1}{2}$ in. apart, including the petiole 3–6 in. long, $3\frac{1}{2}$–5 in. wide, green, glabrous above, reticulate, sparingly pilose or glabrous underneath; lobes 5–10 on each side, pinnately lobulate or occasionally coarsely toothed; lobes ovate-triangular, abruptly spinosely acuminate with cartilaginous edges; petiole up to 2 in. long, narrowly winged. *Racemes* solitary or several together in a terminal panicle, secund, up to 6 in. in length, rachis pubescent or tomentose; pedicels soon reflexed, 3–5 lin. long, softly pubescent or tomentose. *Perianth* red, softly pubescent outside, glabrous within; tube $\frac{1}{4}$–$\frac{1}{2}$ in. long, enlarged and somewhat gibbous below the middle, narrowed and revolute under the limb; limb wide-ovate, mucronate at the tip, inflexed. *Anthers* under 1 lin. long. *Gland* transversely oblong, fleshy, glabrous. *Ovary* sessile, oblique, tomentose; style far exserted, $1\frac{1}{4}$–$1\frac{3}{4}$ in. long, shortly pubescent; stigmatic disk widely oblique.

Fig. 1, flower; 2, limb with stamen; 3, ovary:—*all enlarged.*

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Tab. 8511.

SOLENOSTEMON Godefroyae.

Congo and Angola.

Labiatae. Tribe Ocimoideae.

Solenostemon, *Schum. & Thonn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 1175.

Solenostemon Godefroyae, *N. E. Brown*, species *S. ocymoidi*, Schum. & Thonn., affinis sed foliis minoribus et obtusioribus, calyce multo minore et corolla duplo majore conspicue differt.

Herba ad 60 cm. alta, ramosa, ramis quadrangularibus minute puberulis viridibus. *Folia* oppo-ita, utrinque minute puberula, viridia, subtus pallidiora; petiolus 1·2–3 cm. longus; lamina 2–4 cm. longa, 2–4·5 cm. lata, latissime ovata vel deltoideo-ovata, basi truncata vel cuneato-truncata, leviter crenata, venis supra impressis subtus prominentibus. *Racemi* terminales spiciformes, 15–20 cm. longi; verticilli subdistantes. *Bracteae* 3–5 mm. longae, abrupte reflexae, deciduae, integrae et ovatae, canaliculati-acuminatae vel inferiores trilobae, lobis lateralibus dentatis. *Pedicelli* 2 mm. longi, minutissime puberuli. *Calyx* subaequaliter bilabiatus cum dentibus duobus minutis interjectis, minutissime puberulus, viridis; labium superius reflexum, ovatum, subacutum, labium inferius porrectum, oblongum, minute emarginatum; dentes laterales 0·5 mm. longi, acuti. *Corolla* 1 cm. longa, coerulea; pars tubi basalis abrupte sursum curvata, pars superior abrupte deflexa, compresso-dilatata; labium superius 1·5 mm. longum, subtruncatum, 4-crenatum; labium inferius 5 mm. longum, 3·5 mm. profundum, lateraliter compressum, subobtusum. *Stamina* 5 mm. longa, filamenta in vaginam 2 mm. longam connata, albida; antherae violaceae. *Stylus* staminibus longior.—*Coleus Godefroyae*, Godefroy-Lebeuf, Cat. Pl. Nouv. 1903, p. 2, cum icon.—N. E. Brown.

The pleasing stove plant which is here figured belongs to the Labiate genus *Solenostemon*, which is very closely allied both to *Plectranthus* and to *Coleus*, but is readily distinguished from these two genera by its subequally two-lipped calyx, the upper lip being entire, the lower minutely notched at the tip. Of the seven species known to belong to the genus, *S. Godefroyae* is the first to find a place in cultivated collections. First discovered by Mr. and Mrs. Monteiro in 1873, about fifteen miles from Ambriz in Angola, it was in the "Flora of Tropical Africa" referred to its proper genus, but was not distinguished from *S. ocymoides*, Schum. & Thonn. Thirty years later it was rediscovered in the Congo State by Mr. Godefroy-Lebeuf, and was treated by him in his Catalogue as a distinct species, though unfortunately Mr. Godefroy-Lebeuf, who at the

same time supplied a figure of the plant, placed it in the genus *Coleus*. A plant in flower was sent to Kew in November, 1903, by Messrs. Sander & Sons, St. Albans, and in 1911 another plant was supplied to Kew by the Jardin Colonial, Laeken. From the last mentioned plant, which has thriven well when grown in an intermediate temperature along with Begonias, where it forms a shrub two feet high which flowers freely throughout the winter, was derived the material on which our figure has been based.

DESCRIPTION.—*Herb*, up to 2 ft. high, branched; branches 4-angled, finely puberulous, green. *Leaves* opposite, finely puberulous on both sides, green, rather paler beneath, $\frac{3}{4}$–$1\frac{1}{4}$ in. long, $\frac{3}{4}$–$1\frac{3}{4}$ in. wide, very wide ovate or deltoid ovate, base truncate or cuneate-truncate, slightly crenate; nerves sunk above, raised beneath; petiole $\frac{1}{2}$–$1\frac{1}{4}$ in. long. *Racemes* terminal, spiciform, 6–8 in. long; whorls somewhat separated; bracts $1\frac{1}{2}$–$2\frac{1}{2}$ lin. long; abruptly reflexed, deciduous, entire, ovate, channelled-acuminate or the lowest 3-lobed with toothed lateral lobes; pedicels 1 lin. long, very finely puberulous. *Calyx* subequally 2-labiate with 2 very minute intercalary teeth, very finely puberulous, green; upper lip reflexed, ovate, subacute, lower lip straight, oblong, finely emarginate, lateral teeth very short, acute. *Corolla* $\frac{1}{3}$ in. long, blue; basal portion of the tube abruptly upcurved, upper portion abruptly deflexed, flattened-dilated; upper lip very short, subtruncate, crenately 4-toothed; lower lip $2\frac{1}{2}$ lin. long, nearly 2 lin. deep, compressed sideways, nearly blunt. *Stamens* $2\frac{1}{2}$ lin. long, filaments white, united in a sheath 1 lin. long; anther violet. *Style* longer than the stamens.

Fig. 1, portion of the stem; 2, a flower; 3, calyx with pistil and gland; 4, corolla, part of the lower lip removed to show the stamens; 5 and 6, anthers:—*all enlarged.*

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M.S del. J.N.Fitch lith.

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Tab. 8512.

AGATHIS vitiensis.

Fiji Islands.

Coniferae. Tribe Araucarieae.

Agathis, *Salisbury*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 436.

Agathis vitiensis, *Benth. et Hook. f. ex Drake, Ill. Fl. Ins. Mar. Pacif.* (1892) p. 353, nomen; *Masters, Handl. Conif. Roy. Gard. Kew,* p. 61 (1896); ed. ii. p. 67 (1903); *Warbury, Monsunia,* p. 186 (1900); affinis *A. macrostachyae,* Warburg, sed ramis glabris, amentis masculis minoribus, strobilis majoribus et seminum alis differt.

Arbor excelsa, resiniflua. *Rami* laeves, subquadrangulares. *Folia* opposita vel subopposita, lanceolata, apice acuta vel obtusiuscula, basi attenuata, 9–12·5 cm. longa, 2–3·5 cm. lata, supra viridia, subtus pallidiora interdum pruinosa, sessilia, striata, coriacea. *Amenta* mascula extra-axillaria, cylindrica, 3 cm. longa, 1·5 cm. lata, apice obtusa, basi rotundata, perulata; pedunculi 7–8 mm. longi, cum axe confluentes; filamenta 3 mm. longa, horizontalia, in connectivum cuneatum producta; antherarum loculi 7, cylindrici, connectivi basi penduli, filamento paralleli et aequilongi. *Strobili* globosi, 8·5 cm. longi, 9·5 cm. diametro; squamae lignosae, dense imbricatae, circiter 5 cm. latae, 4 cm. altae, apice crassiores, rhombiformes, ab axi solutae. *Semina* solitaria, integumento membranaceo utrinque in alam producto; ala altera parva, angusta, altera magna, cultriformis.—*Dammara vitiensis*, Seem. in Bonplandia, vol. ix. (1861), p. 259, nomen, et Fl. Vitiensis, p. 265, t. 76 (1865). *D. longifolia*, Lindl. ex Gord. Pinet., Suppl. p. 28 (1862).—J. J. Clark.

The Dammar which forms the subject of our illustration is endemic in mixed forest in the Fiji Archipelago, where it is known as the Dakua, and is abundant in the islands of Vanua Levu and Viti Levu, though it also occurs, but less plentifully, in the Islands of Ovalau and Kaduvu. From Ovalau some particularly fine individuals have been reported; one of these had a diameter of five feet; others had attained a height of from eighty to a hundred feet, with sixty feet of clean stem. The bark in *A. vitiensis* peels off like that of the Australian gum-trees, the shreds being whitish outside, red on the inner surface. The wood, which serves much the same uses as deal, is employed by the Fijians for house-floors, and for masts, booms and spars. Unfamiliarity with its value has led to neglect as an article of commerce of the gum which the tree exudes. In the interior of the larger islands, however, this gum, made into pastilles or

ribbon-like strips surrounded by pieces of wood, has been used for burning in place of the cocoa-nut oil employed in the smaller islands. This gum, known as Makadre, burns better after it has been kept for a time. From the smoke a pigment used by the natives for personal adornment is obtained. The material for our figure has been supplied by a plant raised at Kew from seeds presented in 1881 by Sir J. B. Thurston, then Governor of Fiji. This plant was grown in the tropical Palm House until 1897 when it was transferred to the newly constructed Mexican House. Here it has thriven well and is now a tree twenty-five feet in height. The female cone depicted was developed in 1911; male catkins had, however, been borne in previous years.

Description.—*Tree*, tall, resiniferous; branches smooth, 4-angled. *Leaves* opposite or subopposite, lanceolate, acute or bluntish, narrowed at the base, $3\frac{1}{2}$–5 in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. wide, green above, paler and sometimes pruinose beneath, sessile, striate, coriaceous. *Catkins* extra-axillary, cylindric, $1\frac{1}{4}$ in. long, $\frac{2}{3}$ in. wide, blunt, base rounded, perulate; peduncles $\frac{1}{3}$ in. long, confluent with the axis; filaments $\frac{1}{8}$ in. long, horizontal, prolonged into a cuneate connective; anther-cells 7, cylindric, pendulous from the base of the connective, parallel with and as long as the filament. *Cones* globose, $3\frac{1}{4}$ in. long, $3\frac{1}{2}$ in. wide; scales woody, closely imbricate, about 2 in. across, $1\frac{3}{4}$ in. deep, rather thickened at the apex, rhombiform, detaching from the axis. *Seeds* solitary, with a membranous coat produced on each side as a wing, on one side small and narrow, on the other large and broad.

Figs. 1 and 2, male flowers; 3, two scales with seeds; 4, a seed:—*all enlarged.*

M.S.del. J.N.Fitch lith

Vincent Brooks Day & Son Lith.

Reeve & Co. London

Tab. 8513.

ROSA FOLIOLOSA.

North America.

Rosa, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 625.

Rosa (Carolinae) **foliolosa**, *Nutt. ex Torr. & Gray, Fl. N. Amer.* vol. i. p. 460; *S. Wats. in Proc. Amer. Acad.* vol. xx. p. 349; *Gard. & For.* 1890, pp. 100, 101, fig. 22; affinis *R. nitidae*, Willd., ramulis laevibus vel sublaevibus, stipulis et foliolis elongatis et angustis, sepalisque elongatis et minus hispidis differt.

Fruticulus nanus, circiter 0·25–0·5 m. alti. *Ramuli* laeves vel aculeis paucis rectis gracilibus armati, glabri. *Folia* sparsa, 5–7 cm. longa, 7–9-foliolata; rhachis sparse pilosa, foliola breviter petiolulata, lanceolata vel linearioblonga, acuta, serrulata, supra glabra, subtus sparse pubescentia, 2·5 cm. longa, 0·6–1·3 cm. lata; stipulae adnatae, lineares vel angustissime oblongae, acutae vel breviter acuminatae, minute glanduloso-ciliatae, 2–2·5 cm. longae. *Flores* speciosi, coccineo-rosei, 5–5·5 cm. diametro, in ramulorum brevium apicibus pauci vel solitarii, pedunculi 1–1·5 cm. longi, glanduloso-setulosi. *Receptaculum* globosum, glanduloso-setulosum, 5 mm. longum. *Calycis* lobi oblongo-lanceolati, longissime acuminati, glanduloso-setulosi, 2–2·5 cm. longi, patentes vel subreflexi. *Petala* lata, obcordata. *Filumenta* glabra, 4–5 mm. longa, antheris aureis. *Fructus* globosus, glanduloso-setulosus, 8–10 mm. longus. *Achaenia* stylisque villosa.—R. A. Rolfe.

The Rose here figured, which is one of the most distinct of the American species, has been described as the South-Western Prairie Rose owing to its being apparently restricted to the prairie region of Arkansas, northern and central Texas and the Indian territory. It is well characterised by its very dwarf habit, its running rootstocks and its fragrant carmine blossoms. It was originally discovered by Nuttall during his Arkansas visit in 1818–20, but was not published by Torrey & Gray until twenty years later, and after it had been met with in Texas by Berlandier, Drummond and others. The garden history of *R. foliolosa* is somewhat obscure. It was, according to a manuscript list of the trees and shrubs in cultivation at Kew prepared in 1880 by Sir Joseph Hooker, already in the Kew collection at that date, but as late as 1890 it was still deemed a rare plant at Harvard, Massachusetts. The material for our illustration has been obtained from a plant in the garden of Canon Ellacombe at Bitton, where it was in flower as late

as the end of August, 1912. As a garden rose *R. foliolosa* is charming in the bright colouring of its petals and in its dwarf stature. Owing to its habit of spreading by underground suckers it is easily increased by division. In rich deep loam, such as it experiences in the Bitton garden, this species succeeds admirably.

DESCRIPTION.—*Shrub* of dwarf habit, 1–1½ ft. high; twigs smooth or armed with a few straight slender prickles, glabrous. *Leaves* scattered, 2–3 in. long; rachis sparingly pilose; leaflets 7–9, shortly petiolulate, lanceolate or linear-oblong, acute, serrulate, glabrous above, sparingly pubescent beneath, ¾–2 in. long, ¼–½ in. wide, stipules adnate, linear or very narrowly oblong, acute or shortly acuminate, finely glandular-ciliate, ¾–1 in. long. *Flowers* showy, cardinal-red, 2–2½ in. across, few or solitary at the tips of short twigs; peduncles ⅓–½ in. long, glandular-setulose. *Receptacle* globose, glandular-setulose, ⅕ in. long. *Calyx-lobes* oblong-lanceolate, glandular-setulose, ¾–1 in. long, spreading or somewhat reflexed. *Petals* broadly obcordate. *Filaments* glabrous, ⅙–⅕ in. long; anthers golden yellow. *Fruit* globose, glandular-setulose, over ⅓ in. long. *Achenes* and styles villous.

Fig. 1, portion of a leaf, showing the base of the leaflets and the free portion of the glandular stipules; 2 and 3, stamens; 4, achene with style:—*all enlarged.*

Mrs. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d imp

L. Reeve & Co. London

Tab. 8514.

CATASETUM MICROGLOSSUM.

— *Peru.*

Catasetum, *Kunth*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 551.

Catasetum (Myanthus) microglossum, *Rolfe*; species nova a *C. barbato*, Lindl., labello parvo et cristae filamentis erectis et dense aggregatis differt.

Herba epiphytica. *Pseudobulbi* fusiformi-oblongi, apice 5–6-foliati, 8–10 cm. longi. *Folia* elliptico-oblonga, acuta vel abrupte acuminata, plicata, 20–27 cm. longa, 4·5–6·5 cm. lata. *Scapi* subbasales, elati, arcuati, vaginis spathaceo-oblongis obtecti, 60–65 cm. alti; racemi laxi, multiflori. *Bracteae* lanceolato-oblongae, acutae, 1–1·3 cm. longae. *Pedicelli* graciles, 2·5–3·5 cm. longi. *Flores* mediocres, sordide purpurei, labello flavo. *Sepalum* posticum erectum, oblongo-lanceolatum, acutum, convexum, 2·3–2·5 cm. longum; sepala lateralia patentia, oblongo-lanceolata, acuta, valde concava, 2·3–2·5 cm. longa. *Petala* erecta, oblongo-lanceolata, acuta, plana, sepalo postico subaequalia. *Labellum* parvum, reflexum, 7–8 mm. longum, subintegrum, basi saccatum, facie crebre cristata. *Columna* clavata, 1·7 cm. longa, rostrata; antennae 7 mm. longae, incurvae, paullo divergentes.—R. A. Rolfe.

The interesting *Catasetum* now figured was presented to the Kew Collection by Mr. W. Fox, by whom it had been found in November, 1911, growing on a dead stump near an Indian house on the River Igaraparana, a tributary of the River Putumayo in Peru. It has been grown in a tropical house under the treatment suitable for other members of the genus and has thriven well. It flowered for the first time in March, 1913. Owing to the numerous filiform appendages on the labellum, *C. microglossum* may be regarded as an ally of *C. barbatum*, Lindl., a species figured at t. 3514 of this work under the name *Myanthus barbatus*. It differs, however, from *C. barbatum* and from all the other members of the same group in having a greatly abbreviated and saccate lip with, as a consequence, the aggregation of the appendages in a dense mass. The tips of the sensitive antennae are partially embedded among the filaments of the lip.

Description.—*Herb*, epiphytic; pseudobulbs fusiform-oblong, 3–4 in. long, crowned by 5–6 leaves. *Leaves* elliptic-oblong, acute or suddenly acuminate, plicate, 8–11

in. long, $1\frac{3}{4}$–$2\frac{1}{2}$ in. wide. *Scapes* subbasal, tall, arcuate, covered with oblong-spathaceous sheaths, about 2 ft. long, subtending lax many-flowered racemes; bracts lanceolate-oblong, acute, about $\frac{1}{2}$ in. long; pedicels slender, 1–$1\frac{1}{2}$ in. long. *Flowers* medium-sized, dull purple with a yellow lip. *Sepals* up to 1 in. long; posterior erect, oblong-lanceolate, acute, convex; lateral spreading, oblong-lanceolate, acute, deeply concave. *Petals* erect, oblong-lanceolate, acute, flat, about as long as the posterior sepal. *Labellum* small, reflexed, $\frac{1}{3}$ in. long, subentire, saccate at the base, closely crested on the upper side. *Column* clavate, $\frac{2}{3}$ in. long, beaked; antennae $\frac{1}{4}$–$\frac{1}{3}$ in. long, incurved, slightly spreading.

Fig. 1, lip and column; 2, section of lip; 3, column; 4, pollinarium; 5, sketch of an entire plant:—*all enlarged except* 5, *which is much reduced.*

M.S. del. J.N. Fitch lith.

Vincent Brooks Day & Son Lith. Imp.

L. Reeve & Co. London.

Tab. 8515.

IRIS mellita.

Thrace and Asia Minor.

Iridaceae. Tribe Irideae.

Iris, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 686.

Iris mellita, *Janka in Magyar Tud. Akad. Math. Termesz.* vol. xii. (1874) p. 172, *et in Termesz. Füsetek,* vol. i. (1887) p. 243 (p. 2 seors. impress.); *Bak. in Gard. Chron.* 1876, vol. vi. p. 709, *et in Handb. Irid.* p. 30; *Velenovský, Fl. Bulg.* p. 533; *Dykes, The genus Iris,* p. 149; species affinis *I. Reichenbachii,* Heuff., a qua differt spathis perdiu viridibus divergentibus perigonii tubum exponentibus magis acuminatis, perigonii tubo longiore.

Herba rhizomate digitis crassitudine vel minore. *Folia* dense fasciculata, ensata, magis minusve falcata, sub anthesi ad 6 cm. longa et ad 1·5 cm. lata, demum elongata, viridia, laevia, nervis primariis tenuibus utrinque circiter 6. *Caulis* brevissimus vel elongatus, ad 12 cm. attingens, 1–3-(plerumque 2-)florus. *Spathae* herbaceae, perdiu virides, oblongo-lanceolatae, acuminatae, subtumidae, carinatae, divergentes, perigonii tubum exponentes, majores ultra 6 cm. longae. *Pedicellus* brevissimus. *Perigonii* tubus virescens, superne rubro-maculatus, 4–4·5 cm. longus, rarius longior, spathas superans; segmenta exteriora limbo deflexo tubo appresso obovato-oblongo subemarginato 3·5–4 cm. longo 1·5–2 cm. lato luride purpureo vel luteo venis basin versus rubescentibus percurso, barba caerulescenti-alba, ungue 2·5–3 cm. longo late cuneato pallidiore rubro-venoso; segmenta interiora erecta, late oblonga, subito in unguem rubro-maculatum contracta, lamina 5·5–6 cm. longa, 3·5 cm. lata, luride purpurea vel lutea, basin versus rubro-maculata et striolata, margine undulato. *Stamina* filamentis albis, antheris albidis paulo brevioribus. *Ovarium* cylindricum, apice attenuatum, 1 cm. longum; styli rami anguste oblongi, trigona, 10–11 cm. longa. *Capsula* 2–2·5 cm. longi, pallidi, cristae lobis dentatis oblique late ovatis. *Semina* subglobosa, saturate rubro-fusca, rugosa.—*I. rubro-marginata,* Bak. in Gard. Chron. 1875, vol. iii. p. 524. *I. Straussii,* Leichtl. ex Micheli in Rev. Hort. 1899, p. 363; Dykes in Gard. Chron. 1909, vol. xlv. p. 391.—O. Stapf.

The charming *Iris* which forms the subject of our illustration is one for the material of which we are indebted to the Hon. Mr. N. C. Rothschild, who has also presented the plant itself to the Kew Collection. It was obtained in the first instance, so Mr. Rothschild informs us, from Mersina in Cilicia. In referring this *Iris* to *I. mellita* it will be observed that Dr. Stapf applies the name first employed by Professor Janka to a plant from Thrace in such a way as to include the *Iris* from Asia Minor described by Mr. Baker as *I. rubro-marginata,* and at the same time yet another plant which fourteen years ago was introduced by the late Mr.

Max Leichtlin to European gardens, ostensibly as a native of Western Persia, under the name *I. Straussii*. In connection with the expression of this more comprehensive view it may be remarked that Professor Velenovský, whose local knowledge is so exhaustive, admits that *I. rubro-marginata*, Bak., and *I. mellita*, Janka, are identical, and that Mr. Dykes, in his recent authoritative review of the genus, does the same. The presence of a purple edging to the leaves and spathes, whence *I. rubro-marginata* derived its name, is, as Mr. Dykes has pointed out, an unstable feature. Apart from this character the Asia Minor plant, judging from herbarium material, differs from the Thracian form mainly in having somewhat stouter rhizomes and broader leaves, with practically no stems. The plant here figured is, then, a "rubro-marginata" without any trace of the purple edging. In the specimens of *I. Straussii*, Leichtl., as cultivated at Kew, we find the broad leaves of *I. rubro-marginata* but a distinct stem. The Kew plants are from rhizomes communicated by the late Mr. Leichtlin in 1899, the year in which the description of *I. Straussii* first appeared. Mr. Dykes has stated that more than one species has been put on the market as *I. Straussii*; he even appears to doubt whether the *I. Straussii* originally issued by Mr. Leichtlin came from Sultanabad in Persia. As to the latter point it is clear that about 1898 Mr. Leichtlin did receive from Mr. Strauss an *Iris* from Sultanabad which he named *I. Straussii* in compliment to its contributor. It is also certain that Mr. Leichtlin distributed specimens of an *Iris* under that name, and it is certain that the description of *I. Straussii* in the "Revue Horticole" for 1899 exactly fits the plant sent to Kew under the same name in the same year. The suggestion that the confusion to which Mr. Dykes alludes was created by Mr. Leichtlin at the outset, is not borne out by the evidence at our disposal. If such a confusion arose later on, there is no trace of its existence among the plants sent by Mr. Leichtlin to Kew. So far as existing knowledge goes, these Thracian, Anatolian and Persian plants are not more than forms of the same somewhat variable species. Janka originally described *I. mellita* as having dull violet or purplish flowers, with a bluish-white beard. Velenovský has in one passage termed them violet or greenish-violet; in another "most often violet but some-

times dull violet, rarely yellowish." The original *I. rubro-marginata* had uniformly lurid purple flowers; the *I. Straussii* of the "Revue Horticole" had brownish and violet flowers. In a drawing made at Kew in 1901 of one of the plants of *I. Straussii* communicated by Mr. Leichtlin the flowers are brownish-violet, the standards being of a clearer and deeper colour; the falls and the standards are brownish at the base with just the mottling shown in the yellow form from Mersina now figured. The veining of the claws of the falls and the colouring of the beard also agree, except that the tips of the hairs of the latter are of a deeper blue. The original *I. mellita* was first collected by Janka in 1871 on dry grassy slopes on Tschiendem Tepe near Philippople in Bulgaria; it has since then been frequently met with throughout southern Bulgaria. The original *I. rubro-marginata* was described from specimens collected near Scutari by Mr. W. Barbey of Geneva, but it has since been sent to Europe from Smyrna. The plants at Kew received and grown under the name *I. Straussii* thrive satisfactorily in well-drained loamy soil in a border on the south side of a warm building, where they flower annually but do not ripen seeds.

DESCRIPTION.—*Herb*, rootstock as thick as the index-finger or less. *Leaves* densely tufted, ensiform and more or less falcate, at flowering time up to $2\frac{1}{2}$ in. long, over $\frac{1}{2}$ in. wide, later on elongated, green, smooth, with about 6 slender primary veins on each side. *Stem* very short or at times up to $4\frac{1}{2}$ in. long, usually 2-flowered, sometimes 1- or 3-flowered. *Spathes* herbaceous, remaining green for a considerable time, oblong-lanceolate, acuminate, somewhat swollen, keeled, diverging and displaying the perianth-tube; the larger up to $2\frac{1}{2}$ in. long. *Pedicel* very short. *Perianth* with a greenish tube blotched with red upwards, $1\frac{1}{2}$–$1\frac{3}{4}$ in. long, occasionally longer and exceeding the spathes; outer segments with a deflexed, obovate-oblong, slightly emarginate limb appressed to the tube, $1\frac{1}{4}$–$1\frac{1}{2}$ in. long, $\frac{2}{3}$–$\frac{3}{4}$ in. wide, lurid purple or yellow, with distinct longitudinal veins reddish towards the base; beard bluish-white; claw 1–$1\frac{1}{4}$ in. long, wide cuneate, faintly red-veined; inner segments erect, wide oblong, suddenly contracted into a red-blotched claw, blade $2\frac{1}{4}$–$2\frac{1}{2}$ in. long, $1\frac{1}{3}$ in. wide, lurid purple or

yellow, blotched and streaked with red near the base, margin undulate. *Stamens* with white filaments rather shorter than the whitish anthers. *Ovary* cylindric, narrowed to the apex, $\frac{2}{5}$ in. long; style-arms narrow-oblong, $\frac{3}{4}$–1 in. long, pale, crests with obliquely wide-ovate toothed lobes. *Capsule* 3-gonous, 4 in. long. *Seeds* sub-globose, deep reddish-brown, rugose.

Figs. 1 and 2, stamens; 3, style-crests and stigma:—*all enlarged.*

M.S del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lt.d imp.

L. Reeve & Co. London

Tab. 8516.

UTRICULARIA longifolia.

Brazil.

LENTIBULARIACEAE.

UTRICULARIA, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 987.

Utricularia longifolia, *Gardn. in Hook. Lond. Journ. Bot.* vol. i. p. 545; *DC. Prodr.* vol. viii. p. 666; *Benjam. in Mart. Fl. Bras.* vol. x. p. 241; species inter affines foliis magnis loratis vel lanceolato-linearibus basin versus longissime attenuatis insignis.

Herba perennis, dense caespitosa, stolonibus interdum ad 1 mm. vel ultra crassis plurimis vero rhizoidisque tenuiter filiformibus copiose ramosis prope substrati superficiem utriculigeris. *Utriculi* breviter pedicellati, obovoideo-globosi ore minuto basiscopo, 1 mm. longi, labio superiore bifido lobis parce glanduloso-ciliatis supra os incurvis, labio inferiore nullo. *Folia* lorata vel lanceolato-linearia, obtusiuscula, basin versus longissime attenuata et in petiolum abeuntia, ad 30 cm. longa et 8–12 mm. lata, amoene viridia, glabra. *Scapus* gracilis cum inflorescentia ad 6 dm. altus, infra bracteis paucis subulatis sterilibus obsitus. *Flores* ad 10, laxe dissiti, bracteae subulatae, tenues, 5 mm. longae; bracteolae bracteis subsimiles, 2 mm. longae; pedicelli filiformes, ad 2 cm. longi. *Sepala* subaequalia, e basi lata ovata, tenuiter acuminata, sub anthesi circiter 12–13 mm. longa, 6–8 mm. lata. *Corolla* praeter calcar pallidum amoene purpureum, labio supero late ovato obtusiusculo ad 12 mm. alto, infero suborbiculari emarginato, palato gibboso, circiter 25 mm. longo, 30–35 mm. lato, aurantiaco-maculato, calcare albido subacuto 18 mm. longo. *Filamenta* cornucopiiformia. *Stigma* subsessile labio supero minuto oblongo obtuso infero transverse orbiculari-elliptico 2 mm. lato. *Capsula* seminaque ignota.—O. STAPF.

The Bladderwort here depicted is one that was first discovered in 1840 in Brazil by Professor G. Gardner, who found it growing in moist localities on Mt. Pedra Bonita near Tejuco in the state of Minas Geraës. It appears to have been introduced to English gardens some forty years later, and since then has been fairly common in English collections. The plant has been in continuous cultivation at Kew for about thirty years, and has during this period flowered several times, but has never flowered here so satisfactorily as it does at Cambridge, where it grows well in a tropical house under the conditions suitable for *Nepenthes*. The material from which our figure has been prepared was obtained from a Cambridge plant and was communicated by Mr. R. I. Lynch. Especial attention has been called to

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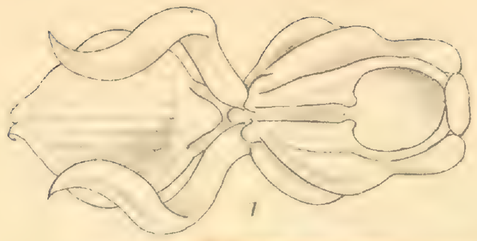
the extraordinary plasticity of the leaves of this species in the "Gardener's Chronicle," vol. iii. ser. 3, p. 360, fig. 54, by Mr. Watson and in "Flora," vol. xlvii. n.s., p. 293, t. 14, fig. 3, by Professor Goebel. Under favourable conditions the leaves may grow out into bladder-bearing stolons or may produce from their tips tufts of leaves and stolons and rhizoids. This phenomenon is not infrequent in the genus *Utricularia*, but in *U. longifolia* it is unusually striking on account of the size of the leaves.

DESCRIPTION.—*Herb*, perennial, densely tufted; stolons about $\frac{1}{20}$ in. thick, numerous, and associated near the surface of the soil with slender filiform copiously branched bladder-bearing rhizoids. *Bladders* shortly pedicelled, obovoid-globose, the mouth minute and directed downwards, $\frac{1}{24}$ in. long; upper lip of bladder 2-fid with the sparingly glandular-ciliate lobes incurved above the mouth, lower lip obsolete. *Leaves* lorate or linear-lanceolate, rather obtuse, very gradually narrowed towards the base into a distinct petiole, up to 12 in. long, $\frac{1}{3}$–$\frac{1}{2}$ in. wide, bright green, glabrous. *Scape* slender, including the inflorescence up to 2 ft. long, beset low down with a few subulate, sterile bracts. *Flowers* 10 or fewer, laxly arranged, bracts subulate, slender, $\frac{1}{5}$ in. long; bracteoles like the bracts, but less than half as long; pedicels filiform, up to $\frac{3}{4}$ in. long. *Sepals* nearly equal, ovate from a broad base, finely acuminate, in flower $\frac{1}{2}$ in. long, $\frac{1}{4}$–$\frac{1}{3}$ in. wide. *Corolla* bright purple except for the pale spur; upper lip wide-ovate, rather obtuse, up to $\frac{1}{2}$ in. long; lower lip suborbicular, emarginate, 1 in. long, $1\frac{1}{4}$–$1\frac{1}{3}$ in. wide; palate gibbous, blotched with orange; spur whitish, rather acute, $\frac{3}{4}$ in. long. *Stigma* subsessile, its upper lobe minute, oblong-obtuse; lower lobe transversely orbicular-elliptic, $\frac{1}{12}$ in. wide.

Fig. 1, bladders; 2, a single bladder; 3, orifice of a bladder; 4, sepal and pistil; 5, portion of corolla and stamens; 6, sketch of an entire plant:—*all enlarged except* 6, *which is much reduced.*



M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Lith.rs imp.

L. Reeve & Co. London.

Tab. 8517.

STANHOPEA GRANDIFLORA.

Ecuador.

ORCHIDACEAE. Tribe VANDEAE.

STANHOPEA, *Frost*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 549.

Stanhopea grandiflora, *Reichb. f. in Walp. Ann.* vol. vi. p. 587, *non Lindl.*; *Rolfe in Orch. Rev.* vol. xx. p. 172; affinis *S. oculatae,* Lindl., sed labelli hypochilio latiore nec gradatim attenuato differt.

Herba epiphytica. *Pseudobulbi* ovoidei, sulcati, circiter 5 cm. longi, monophylli. *Folia* petiolata, elliptica vel obovato-elliptica, abrupte acuminata, plicata, 25–30 cm. longa, 9–11 cm. lata. *Scapi* penduli, 15–20 cm. longi, 4–7-flori, basi vaginis ovato-oblongis imbricatis obtecti. *Bracteae* oblongae vel lanceolato-oblongae, subacutae, convoluto-conduplicatae, 4–5 cm. longae. *Pedicelli* 5–6 cm. longi. *Flores* magni, speciosi, sepala et petala ochracea, purpureo-maculata, labellum album, sparse purpureo-maculatum, et columna viridi-alba, purpureo-maculata. *Sepalum* posticum elliptico-oblongum, subobtusum, concavum, circiter 5·5 cm. longum; sepala lateralia elliptico-ovata, subobtusa, 5·5–6 cm. longa. *Petala* oblonga, acuta, subundulata, circiter 5 cm. longa. *Labellum* circiter 5 cm. longum; hypochilium obovato-oblongum, lateraliter carinatum, ore circulari; mesochilium breve, cornubus incurvis; epichilium elliptico-ovatum, subacutum. *Columna* incurva, 4·5 cm. longa, alis oblongis.—*Epidendrum grandiflorum*, Humb. et Bonpl. Pl. Æquinoct. vol. i. p. 94, t. 27. *Anguloa grandiflora*, Kunth, Nov. Gen. et Sp. vol. i. p. 343.—R. A. ROLFE.

This striking *Stanhopea* is one of the earliest known species of the genus and was originally described and figured by Humboldt and Bonpland in 1805, as *Epidendrum grandiflorum,* from specimens collected in shady woods near Cuenca in Ecuador. Later it was transferred by Kunth to *Anguloa*; still later to its true genus, as *S. grandiflora*, by the younger Reichenbach. This simple history has been somewhat obscured owing to the circumstance that Lindley had in the meantime applied the name *S. grandiflora* to a very different plant, now regarded as merely a form of the earlier *S. eburnea,* Lindl., and because of the fact that Reichenbach reduced to the true *S. grandiflora* the Mexican species *S. Buchepalus*, Lindl., and added to it, as a variety, the Panama species *S. Jenischiana,* Kramer. The confusion thus induced Lindley aggravated by citing the locality and these synonyms of the Ecuador plant under one originally stated by him to be a native of Mexico; later

he transferred the synonyms from the Ecuador species to *S. insignis*, Frost—another error, though one that does not concern us here. The late Mr. Consul Lehmann, whose collections are now at Kew, during a visit to Cuenca was able to collect there further material of *S. grandiflora*, Reichb. f., and to make in the field a coloured sketch of a single flower; this material has enabled Mr. Rolfe, in the "Orchid Review," vol. xx., to disentangle the history of the species. The figure here given has been prepared from a plant which flowered in May, 1912, in the collection of Sir F. Crisp at Friar Park, Henley, who kindly provided the material required. Like the other species of *Stanhopea*, the subject of our illustration thrives well and flowers freely in a warm moist house. Plants are most conveniently grown in baskets suspended from the roof, in a mixture of peat fibre and sphagnum which should be kept moist during the season of growth and dry whilst the plants are at rest.

DESCRIPTION.—*Herb*, epiphytic; pseudobulbs ovoid, sulcate, about 2 in. long, 1-foliate. *Leaves* petioled, elliptic or obovate-elliptic, abruptly acuminate, plicate, 10–12 in. long, $3\frac{1}{2}$–$4\frac{1}{2}$ in. wide. *Scapes* pendulous, 6–8 in. long, 4–7-flowered, clothed below with ovate-oblong imbricate sheaths; bracts oblong or lanceolate-oblong, subacute, convolute-conduplicate, $1\frac{3}{4}$–2 in. long; pedicels $\frac{1}{5}$–$\frac{1}{4}$ in. long. *Flowers* large, showy, sepals and petals yellowish with purple blotches; lip white, sparingly blotched with purple; column greenish-white, blotched with purple. *Sepals*: posterior elliptic-oblong, subobtuse, concave, about $2\frac{1}{4}$ in. long; lateral elliptic-ovate, subobtuse, $2\frac{1}{4}$–$2\frac{1}{2}$ in. long. *Petals* oblong, acute, somewhat undulate, about 2 in. long. *Lip* about 2 in. long; hypochile obovate-oblong, laterally keeled, mouth circular; mesochile short, with incurved horns; epichile elliptic-ovate, subacute. *Column* incurved, $1\frac{3}{4}$ in. long, wings oblong.

Fig. 1, lip; 2, upper part of column; 3, pollinarium:—*all enlarged.*

1
2
3

TAB. 8518.

RHODODENDRON HAEMATOCHEILUM.

China.

ERICACEAE. Tribe RHODOREAE.

RHODODENDRON, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron haematocheilum, *Craib in Gard. Chron.* 1913, vol. liii. p. 214; a *R. Fargesii*, Franch., cui affinis, ovario eglanduloso omnino glabro recedit.

Frutex. Ramuli validi, ad 6 mm diametro, primo virides, dein brunnescentes, juventute pilis brevibus glanduliferis hic illic instructi, mox glabri. *Folia* oblonga, apice rotundata vel obtusa, apiculata, basi rotundata vel rotundato-subcordata, ad 7·6 cm. longa et 3·2 cm. lata, tenuiter coriacea, glabra, supra viridia, subtus pallida, nervis lateralibus utrinsecus 13–15 supra conspicuis subtus prominulis, nervulis uti reticulatione gracili subtus conspicuis, petiolo valido supra canaliculato 7–15 mm. longo suffulta. *Pedicelli* 7–15 mm. longi, pilis brevibus albidis inerassatis parce instructi. *Calyx* brevissimus, denticulatus vel obsolete denticulatus. *Corollae* glabrae tubus 23 mm. longus, basi 1·1 cm. apice 3 cm. diametro, limbus 7-lobus lobis 1·3 cm. longis 2 cm. latis retusis. *Stamina* 14, longiora corollae tubo subaequilonga; filamenta glabra, albida; antherae fuscae. *Ovarium* glabrum, vix 5 mm. altum; stylus stamina circiter 1 cm. superans, glaber. —W. G. CRAIB.

The Rhododendron which we figure is one of the Chinese species raised by Messrs. J. Veitch & Sons from seed collected on their behalf by Mr. E. H. Wilson. While the plants were still young they were referred to *R. Davidii*, Franch., another Chinese species, though it was observed that the leaves in this plant, which are rounded or almost cordate at the base, differ considerably from those of *R. Davidii* which are narrowed to the petiole. Now that flowers are available it is found that *R. haematocheilum* is easily distinguished from *R. Davidii* by its much less elongated inflorescence and by the glabrous, smooth ovary and style. Its nearest allies appear to be *R. Fargesii*, Franch., and *R. Sheltonae*, Hemsl. & E. H. Wils., though it differs from both, as it does from *R. Fortunei*, Lindl., by its pistil. In the expanding flower the corolla is almost blood-red, in the newly expanded flower it is a rich carmine which fades gradually with age. From this striking feature has been taken the name applied to the species, which appears to be hardy in the nurseries of

Messrs. Veitch at Coombe Wood, where it has thriven well under the conditions suitable for other Chinese Rhododendrons. For the material on which our figure has been based we are indebted to Messrs. Veitch.

DESCRIPTION.—*Shrub*; twigs stout, up to $\frac{1}{4}$ in. thick, at first green, at length brownish, when young here and there beset with short glandular hairs, soon glabrous. *Leaves* oblong, rounded or obtuse at the tip, apiculate, rounded or slightly rounded-cordate at the base, up to 3 in. long and $1\frac{1}{4}$ in. wide, thinly coriaceous, glabrous, green above, pale beneath, lateral nerves from 13–15 on each side, conspicuous above and raised beneath, secondary veins and fine reticulation conspicuous beneath; petiole stout, channelled above, $\frac{1}{3}$–$\frac{2}{3}$ in. long. *Pedicels* $\frac{1}{3}$–$\frac{2}{3}$ in. long, sparingly beset with short, whitish, thickened hairs. *Calyx* very short, obscurely or shortly toothed. *Corolla* glabrous; tube under 1 in. long, $\frac{1}{2}$ in. wide below, $1\frac{1}{4}$ in. wide above; limb 7-lobed; lobes 2 in. long, $\frac{3}{4}$ in. wide. *Stamens* 14, the longer ones about as long as the corolla-tube; filaments white, glabrous; anthers dark brown. *Ovary* glabrous, about $\frac{1}{6}$ in. long; style $\frac{1}{3}$ in. longer than the stamens, glabrous.

Fig. 1, bract; 2, calyx and pistil; 3 and 4, stamens; 5, transverse section of the ovary:—*all enlarged.*

M.S.del. J.N.Fitch lith.

Vincent Brooks, Day & Son Lt^d imp.

L. Reeve & C^o. London.

Tab. 8519.

NAUTILOCALYX pallidus.

Peru.

Gesneriaceae. Tribe Cyrtandreae.

Nautilocalyx, *Linden*; *Sprague in Kew Bull.* 1912, p. 88.—Episcia, § Nautilocalyx, *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 1037 (*sensu ampliato*).

Nautilocalyx pallidus, *Sprague in Kew Bull.* 1912, p. 89; foliis magnis pallidis in basin sensim attenuatis, floribus albidis intus postice purpureo-maculatis distinctus.

Herba e basi ramosa, circiter 5 dm. alta, caulibus pluribus erectis teretibus crassis carnosis nitidulis breviter pilosis, internodiis 3·5–7·5 cm. longis. *Folia* ovato-lanceolata, apice breviter acute acuminata, recurva, in basin sensim angustata, 16–25 cm. longa, 6·5–10·5 cm. lata, margine plana, crenato-serrata, sparse ciliata, supra nitidula, pallide viridia, pilis paucis adpressis inconspicuis exceptis glabra, nervis venulisque conspicue impressis, subtus opaca, albo-viridia, primo visu glabra, revera nervis sparse puberulis mesophyllo minutissime puberulo, nervis prominentibus, lateralibus utrinque 12–14, venulis prominulis; petioli 0·8–2 cm. longi. *Cymae* 3–6-florae, bracteis duabus transversis patulis lanceolatis acutis demum usque ad 1·5 cm. longis sparse ciliatis extra puberulis intus glabris; pedicelli sub anthesi 2·5 cm. longi, villosi, demum elongati. *Calyx* zygomorphus; segmenta ovata, acute acuminata, basi rotundata vel subcordata, 2·4–2·5 cm. longa, 1·4–1·7 cm. lata, tenuia, denticulata, sparse ciliata, extra sparsissime puberula, intus glabra; segmentum posticum calcare corollae basi repulsum, valde curvatum. *Corolla* e calyce adscendens, cremeo-albida, dorso calcarata; tubus calcare incluso 5 cm. longus, extra breviter crispule pilosus, intus antice glabriusculus purpureo-striatus, postice minute glanduloso-pilosus, purpureo-vittatus, vittis e maculis numerosis subcontiguis compositis, circiter 1·5 cm. supra basin calcaris ampliatus, abhinc usque ad os ultra 1 cm. latus, a dorso usque ad ventrem vix 1 cm. metiens; calcar amplum, rotundatum, circiter 5 mm. longum; limbus 3 cm. latus, fere 3 cm. a dorso ad ventrem metiens; lobi leviter reflexi, transverse elliptici, 1·1–1·2 cm. longi, 1·4–1·6 cm. lati. *Filamenta* in vaginam postice fissam in calcar 3 mm. productam corollae tubo adnatam connata, superne antheris disjunctis spiraliter torta, antica longiora, vagina antice 7·5 mm. longa, lateraliter 5 mm. longa; antherae per paria apicibus connectivorum connatae, 3 mm. longae, connectivo dorso valde incrassato 2·5 mm. longo, 1 mm. lato, loculis omnino sejunctis parallelis mytiliformibus. *Disci* glandula unica, postica, 2·5 mm. longa, sparse longiuscule ciliata. *Ovarium* ovoideum, 5 mm. longum, pilis multicellularibus acutissimis dense indutum; stylus vix 3 cm. longus, pilis multicellularibus acutissimis et paucioribus glanduloso-capitatis patule hirsutus; placentae ad basin bipartitae, segmentis plano-convexis introrsum tantum ovuliferis.—*Alloplectus pallidus*, Sprague in Kew Bull. 1911, p. 346.—T. A. Sprague.

The subject of our illustration is a native of Peru which belongs to a very natural group of species formerly referred partly to *Episcia* and partly to *Alloplectus*, more

recently brought together under the old generic name *Nautilocalyx*. The species in question agree with *Episcia* as to habit and in general facies, but differ from members of that genus in having ovules only on the inner surface of the placental lamellae. From *Alloplectus* they are readily distinguished in being herbs and in having a relatively large corolla-limb. The mussel-shaped anther-thecae serve to separate them from the closely allied genus *Centrosolenia*. The plant from which the material for our figure has been obtained was presented to Kew by Messrs. F. Sander & Sons, St. Albans, to whom it had been sent from Peru by their collector Mr. Forget. It grows freely under warm greenhouse conditions and forms numerous stems which flower more or less continuously throughout the summer. It is easily propagated by means of cuttings; it also ripens seeds. There are two other species of *Nautilocalyx* in cultivation, both readily distinguishable from *N. pallidus* in having yellow flowers and leaves purple beneath. One of them, *N. Lynchii*, has been figured in this work, at t. 7271, as *Alloplectus Lynchii*; it has smooth leaves and has calyx-segments much shorter than the corolla-tube, and is thus readily distinguished from the other, *N. bullatus*, often known as *Episcia tesselata*, which has bullate leaves and calyx-segments nearly as long as the corolla-tube.

DESCRIPTION.—*Herb*, branching at the base, stems several, erect, cylindric, thick and fleshy, shining, shortly pilose, 1½ ft. high, internodes 1½–3 in. long. *Leaves* ovate-lanceolate, shortly sharply acuminate, recurved, gradually narrowed to the base, 6–10 in. long, 2½–4 in. wide, margin flat, crenate-serrate, sparingly ciliate, shining above, pale green, nearly glabrous, the nerves and veins distinctly sunk, underneath dull, whitish-green, apparently glabrous, in reality very finely puberulous, nerves and veins raised; lateral nerves about 12–14 on each side; petioles $\frac{1}{3}$–$\frac{3}{4}$ in. long. *Cymes* 3–6-flowered; bracts paired, spreading, lanceolate, acute, at length $\frac{2}{3}$ in. long, sparingly ciliate-puberulous outside, glabrous within; pedicels in flower 1 in. long, villous, at length elongated. *Calyx* zygomorphous; lobes ovate, acutely acuminate, base rounded or subcordate, about 1 in. long, $\frac{1}{2}$–$\frac{2}{3}$ in. wide, thin, denticulate, sparingly

ciliate, slightly hairy outside, glabrous within; upper segment pushed backwards by the corolla spur, much curved. *Corolla* creamy-white, spurred behind; tube with spur 2 in. long, shortly crisply hairy outside, within purple-streaked and almost glabrous in front, glandular-hairy and banded with purple behind, widened some distance above the rounded spur; limb $1\frac{1}{4}$ in. wide; lobes slightly reflexed, transversely elliptic, about $\frac{1}{2}$ in. long, $\frac{2}{3}$ in. wide. *Filaments* connate in a sheath open behind, extending into the spur and adnate to the corolla-tube, spirally twisted upwards, the anterior pair the longer; anthers connate in pairs by the connective-tips; thecae mussel-shaped; connective much thickened behind. *Disk* of a single posterior gland, sparingly rather long ciliate. *Ovary* ovoid, $\frac{1}{5}$ in. long, densely clothed with pointed many-celled hairs; style over 1 in. long, patently hirsute with pointed many-celled hairs and with scattered glandular-capitate hairs; placentae 2-partite at the base, segments plano-convex, ovule-bearing only on the inner side.

Fig. 1, calyx, base of corolla tube, stamens and pistil; 2 and 3, anthers; 4, ovary and disk:—*all enlarged.*

M. S. del. J.N. Fitch. lith

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L. Reeve & Co. London

Tab. 8520.

SCHIZOPHRAGMA HYDRANGEOIDES.

Japan.

Saxifragaceae. Tribe Hydrangeae.

Schizophragma, *Sieb. et Zucc.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 641.

Schizophragma hydrangeoides, *Sieb. et Zucc. Flor. Jap.* vol. i. p. 58, t. 26; *C. K. Schneider in Laubholzk.* vol. i. p. 393, fig. 252; species a ceteris hujus generis foliis minoribus dentatis nec integris apte distinguenda.

Frutex deciduus, radicibus ope subaeriis alte scandens; ramulis primum laxe pubescentes demum glabrati. *Folia* opposita, exstipulata, membranacea, late ovata vel suborbicularia, acuta vel acuminata, basi truncata vel cordata, margine grosse dentata, 5–14 cm. longa, 4–14 cm. lata, supra sordide viridia praesertim secus nervos breve adpresse pubescentia, subtus pallidiora secus costam et in axillis nervorum pilosa; nervi laterales utrinsecus 5–7; petiolus 4–10 cm. longus, parce pubescens. *Flores* in corymbum terminalem 10–20 cm. latum cymosim aggregati, perfecti perparvi congesti, steriles ad marginem corymbi restricti et in bracteas singulas lacticolores membranaceas ovatas cordatasve apice acutas vel rotundatas distincte reticulatas 1·5–4·5 cm. longas 1–3 cm. latas ramulos primarios terminantes redacti. *Calyx* turbinatus, 5-lobus, laxe pubescens; lobi triangulares. *Petala* 5, rotundato-ovata, concava 2·5 mm. longa, alba. *Stamina* 10, longe exserta, 6 mm. longa; filamenta glabra; antherae luteae. *Carpella* 4–5; styli connati; stigma 4–5-lobum. *Capsula* turbinata, 10-striata, 6 mm. longa, pedicello pubescente suffulta.—W. J. Bean.

The subject of our plate bears a name which is familiar in English gardens, where it has for a couple of generations been erroneously applied to *Hydrangea petiolaris*, Sieb. & Zucc., another and an allied Japanese climbing shrub. There has never been any very valid excuse for this curious misapprehension, because in *H. petiolaris* the sterile flowers have four segments, whereas in the sterile flowers of *Schizophragma* there is but a single bract. As a matter of fact, in spite of the familiar misuse of its name, the true *S. hydrangeoides*, now figured, is a comparatively recent introduction to British gardens and appears to have first blossomed in this country in 1905 with the late Mr. B. E. Chambers, of Grayswood, Haslemere. The spray from which our plate has been prepared came from the garden of Miss E. A. Willmott at Warley Place, on July 12, 1912, and a few days later a second spray was received from Sir Edward Fry, from his garden at Failand House, near Bristol. The plant at Warley Place grows along with *Hydrangea petiolaris* on the wall of one of the garden offices, where the two flower

simultaneously. In wild specimens there is much variation in the size of the sterile bracts, and that this is nearly as marked in cultivated examples will be realised when the cordate bract in the upper right-hand corner of our plate, which was drawn from Sir E. Fry's specimen, is compared with those drawn from Miss Willmott's spray. The only other known species of the genus are *S. integrifolia*, Oliv., and *S. hypoglauca*, Rehder; both are readily distinguished from *S. hydrangeoides* by their larger, entire leaves. *S. hydrangeoides* does not flower freely in the British Islands; probably it requires more sun than our climate usually affords. The fact that its flowering was reported from several places in 1912 may well have been the result of the heat of the previous year. In the Eastern United States, however, it seems to flower as freely as *Hydrangea petiolaris* does with us. It likes a good loamy soil.

Description.—*Shrub*, deciduous, climbing by means of aerial roots and attaining the tops of trees up to 40 ft. high; twigs at first covered with loose down, soon becoming glabrous. *Leaves* opposite, exstipulate, membranous, broadly ovate or nearly orbicular, acute or acuminate, base truncate or cordate, coarsely dentate, 2–5½ in. long, 1½–5½ in. wide, dull green above, with short adpressed hairs chiefly on the main-nerves and midrib, beneath rather pale, pubescent on the midrib and in the angles between midrib and main-nerves; lateral nerves 5–7 along each side; petiole 1½–4 in. long, sparingly pubescent. *Flowers* in a cymose terminal corymb, 4–8 in. wide; the perfect flowers very small and crowded; the sterile flowers confined to the margin of the corymb, each reduced to a solitary creamy-white, membranous, reticulately veined, ovate or cordate bract, acute or rounded at the tip, terminating the principal ramifications, ⅝–1¾ in. long and ⅜–1⅜ in. wide. *Calyx* turbinate, 5-lobed, loosely pubescent; lobes triangular. *Petals* 5, white, roundish ovate, concave, $\frac{1}{10}$ in. long. *Stamens* 10, far exserted, ¼ in. long; filaments glabrous; anthers yellow. *Carpels* 4–5; styles coalescing; stigma 4–5-lobed. *Capsule* turbinate, 10-ribbed, ¼ in. long; pedicels pubescent.

Fig. 1, bud; 2, flower with petals removed; 3, calyx and pistil; 4, aborted flower:—*all enlarged.*

M.S. del. J.N. Fitch lith

Vincent Brooks, Day & Son Ltd imp

Tab. 8521.

STREPTOCARPUS CYANEUS.

Transvaal.

Gesneraceae. Tribe Didymocarpeae.

Streptocarpus, *Lindl.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 1023.

Streptocarpus cyaneus, *S. Moore in Journ. Bot.* 1905, p. 172; species arcte affinis *S. Rexii,* Lindl., sed scapis semper biflоris, corollae tubo multo breviore et colore diverso facile distinguenda.

Herba perennis, acaulis. *Folia* plurima, radicalia, prostrata, 6–21 cm. longa, 1·5–5 cm. lata, subsessilia vel petiolis usque ad 5 cm. longis instructa, anguste elongato-oblonga vel oblongo-lanceolata, obtusa, basi angustata, crenata, subbullato-rugosa, rude pubescentia, viridia, subtus pallidiora. *Scapi* erecti, 8–16 cm. longi, biflori, cum pedicellis floribusque extra pilis simplicibus et glanduloso-capitatis patulis pubescentes. *Pedicelli* 7–17 mm. longi. *Sepala* 5 mm. longa, linearia, obtusa vel subacuta. *Corollae* tubus 1·7–3 cm. longus, anguste infundibuliformis, albus, intra vitta lutea ornatus; limbus obliquus inaequaliter 5-lobus; lobi 7–13 mm. longi, 10–11 mm. lati, suborbiculares vel suborbiculari-oblongi, colore variabiles cyanei vel coeruleo-rosei vel coeruleo-rosei disco loborum superiorum cyanei, lobi inferiores venis fusco-rubris ornati. *Stamina* inclusa; filamenta sursum curvata, alba, superne glandulis aureo-brunneis conspersa; antherae arcte contiguae, ad stylum infra stigmate adpressae. *Discus* aurantiacus. *Ovarium* molliter pubescens, viride; stylus albus, glanduloso-pubescens; stigma album, centro excavatum.—N. E. Brown.

The pleasing *Streptocarpus* which forms the subject of our plate is very closely allied to the well-known *S. Rexii,* Lindl., but differs in having the corolla-tube absoluteiy much shorter and relatively more dilated at the throat. *S. cyaneus* was first met with in 1891 by Mr. E. E. Galpin in wooded kloofs near Barberton, but the specimens on which the original description was based were collected in 1905 by Mr. J. Burtt Davy, who found them growing on rocks and tree-trunks in dense shade at Forbes Reef Bush in Swaziland. The specimen here figured is one of a number raised from seed collected near Barberton by Mr. Thorncroft and presented to Kew by Mr. W. E. Ledger of Wimbledon. The flowers in this stock of seedlings vary in colour from pale lavender or blue to rose-pink or rosy mauve; in the latter case the two upper lobes often shade into blue in the central area; the three lower lobes have a few streaks of red, and a blotch of yellow occurs within the

corolla-tube. The cultural treatment most suitable to *S. Rexii* appears to be that under which *S. cyaneus* grows best and thrives most satisfactorily. Like the other species and varieties of *Streptocarpus* in cultivation, this one is shortlived, and like them it might almost be termed a biennial, at all events most of the forms are at their best in their second year. Mr. Brown is of opinion that individual flowers in this species cannot be self-fertilised, the anthers being so closely pressed together that although open on their opposed faces no pollen can be shed until they are separated, and as the anthers are closely pressed against the style a little below the stigma, it is difficult to conceive that any pollen should reach the stigma without insect aid.

Description.—*Herb*, perennial, but for cultural purposes sub-biennial, stemless. *Leaves* many, radical, prostrate, subsessile or narrowed to a petiole, narrowly elongate-oblong or oblong-lanceolate, obtuse, crenate, slightly bullately rugose, $2\frac{1}{2}$–$8\frac{1}{2}$ in. long, $\frac{2}{3}$–2 in. wide, roughly pubescent on both sides, green above, paler beneath; petiole 0·2 in. long. *Scapes* erect, 3–6 in. long, almost always 2-flowered, pubescent like the pedicels and the flowers outside with simple and gland-tipped spreading hairs; pedicels $\frac{1}{3}$–$\frac{2}{3}$ in. long. *Sepals* $\frac{1}{5}$ in. long, linear, obtuse or subacute. *Corolla* narrowly funnel-shaped; tube $\frac{2}{3}$–$1\frac{1}{4}$ in. long, white with a yellow streak within; limb oblique, unequally 5-lobed; lobes $\frac{1}{3}$–$\frac{1}{2}$ in. long, under $\frac{1}{2}$ in. wide, suborbicular or orbicular-oblong, variable in colour, blue or rose-mauve or rose-pink with the centre of the upper lobes blue and of the lower lobes streaked with red. *Stamens* included; filaments curved upwards, white dotted above with golden-brown glands; anthers closely touching, adpressed to the style below the stigma. *Disk* orange-yellow. *Ovary* softly pubescent, green; style white, glandular-pubescent; stigma white, hollowed in the centre.

Fig. 1, calyx and pistil; 2, part of calyx removed, showing the disk; 3, part of corolla, laid open to show stamens and staminodes; 4, anthers with apices of filaments:—*all enlarged.*

M.S. del, J.N. Fitch lith

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Tab. 8522.

ALOCASIA Micholitziana.

Philippines.

Aroideae. Tribe Colocasiae.

Alocasia, *Schott*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 975.

Alocasia Micholitziana, *Sander in Gard. Chron.* 1912, vol. li. suppl. p. xv. fig. 9; affinis *A. Sanderianae*, Bull, sed foliis minoribus haud vel minus peltatis, minus lobatis, venis lateralibus vix curvatis haud argenteo-marginatis et spadice spatha fere aequilongo differt.

Herba perennis caulescens, omnino glabra. *Caulis* usque ad 40–50 cm. altus, erectus, 2·5–3·5 cm. crassus. *Foliorum* petioli 20–36 cm. longi, basi vel ad medium vaginati, sordide virides, irregulariter fusco-zonati; laminae sagittatae vel leviter peltato-sagittatae, marginibus sinuato-lobatis, supra pulchre atro-virides, venis primariis pallidioribus et costa alba ornatae, subtus pallide virentes; lobus anticus 10–25 cm. longus, 6–14 cm. latus, elongato-deltoideus, acutus; lobi basales 10–15 cm. longi, 3·5–6 cm. lati, deltoidei, obtusi, liberi vel basi breviter connexi, sinu triangulari sejuncti. *Pedunculi* 10–16 cm. longi, virides, maculis sordide fusco-purpureis irregulariter zonati. *Spatha* erecta; tubus 2·5–3 cm. longus, subglobosus vel ellipsoideus, viridis; lamina 9–10 cm. longa, 2·5–3·2 cm. lata, cymbiformis, acuta, extra pallide virens, intus pallide flavo-virens vel albido-virens. *Spadix* cum spatha fere aequilongus, appendice quam parte florifera multo longiore, pallide flavescente. *Ovarium* globosum; stylus perbrevis; stigma subcapitatum.—**N. E. Brown.**

The handsome Aroid of which a figure is here given is a native of the Philippines, where it was first met with some fifteen years ago by Mr. Loher in the province of Benquet in the island of Luzon. It was met with again by Mr. Micholitz, also in Luzon, when collecting there on behalf of Messrs. Sander & Sons, St. Albans, by whom it was introduced to cultivation about three years ago. Very nearly allied to the familiar *Alocasia Sanderiana*, Bull, this new species differs therefrom in having smaller leaves, less deeply lobed at the margins, with a deeper and very different shade of green and without silvery borders to the almost straight (not distinctly curved) primary lateral veins. In our plant, too, the leaves are very rarely peltate, and when they are peltate they are so to a much less degree than is the case in *A. Sanderiana*. The spadix, too, is here nearly as long as the spathe, and its appendix is longer than the floriferous portion, whereas in *A. Sanderiana* the

spadix is much shorter than the spathe and the appendix is shorter than the flower-bearing part. Evergreen in habit, *A. Micholitziana* is easily grown, and thrives well in a shady position in a hot moist stove. It requires an open compost, rich in humus, with abundant moisture at the root during the season of growth. A partial rest should be given during the winter months, the plant being kept somewhat drier at the root, and only sufficient water being supplied to enable it to retain its leaves. Propagation is readily effected by dividing the stem into sections, potting these up and plunging the pots in a moist case in brisk bottom heat until new growths are obtained.

Description.—*Herb*; stock perennial, caulescent, erect, about $1\frac{1}{2}$ ft. in height, 1–$1\frac{1}{2}$ in. thick. *Leaves* sagittate or slightly peltate-sagittate, sinuately lobed, above strikingly dark green with paler midrib and main-nerves, beneath pale green, the anterior lobe 4–10 in. long, $2\frac{1}{2}$–$5\frac{1}{2}$ in. wide, elongate deltoid, acute, the basal lobes 4–6 in. long, $1\frac{1}{2}$–$2\frac{1}{4}$ in. wide, deltoid, blunt, free or slightly united at the base; sinus triangular; petiole 8–14 in. long, sheathing at the base or at times half way up, dull green with irregular bands of brown markings. *Peduncles* 4–6 in. long, green irregularly banded with brownish-purple markings. *Spathe* erect, its tube 1–$1\frac{1}{4}$ in. long, subglobose or elliptic, green; lamina $3\frac{1}{2}$–4 in. long, 1–$1\frac{1}{4}$ in. wide, cymbiform, acute, pale green externally, pale yellowish- or whitish-green within. *Spadix* about as long as the spathe, the appendages pale yellowish, much longer than the fertile portion. *Ovary* globose; style very short; stigma subcapitate.

Fig. 1, spadix; 2, male flowers, seen from above; 3, a single male flower, seen from the side; 4, ovary; 5, the same in vertical section, showing the ovules; 6, an ovule:—*all enlarged.*

M S del. J.N. Fitch lith

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Tab. 8523.

RHODODENDRON SETOSUM.

Eastern Himalaya.

Ericaceae. Tribe Rhodoreae.

Rhododendron, Linn.; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron setosum, *D. Don in Trans. Wern. Soc.* vol. iii. p. 408 *et in Prodr. Fl. Nep.* p. 152; *DC. Prodr.* vol. vii. p. 724; *Hook. f. Rhod. Sikkim Himal.* t. 20 *et in Journ. Hort. Soc.* vol. vii. pp. 81, 105; *C.B. Clarke in Hook. f. Fl. Brit. Ind.* vol. iii. p. 472; **a *R. nivali*, Hook. f., ramulis setosis, foliis majoribus recedit.**

Fruticulus circiter 30 cm. altus; ramuli setis divaricatis deciduis instructi. *Folia* elliptico-obovata vel oblonga, apice rotundata vel fere truncata, costa excurrente breviter apiculata, basi late cuneato-rotundata vel fere truncata, 0·7–1·2 cm. longa, 4–8 mm. lata, coriacea, nervis lateralibus obscuris, costa subtus prominente, pagina utraque parcius lepidota, margine revoluto parcius praecipue inferne setosa, petiolo brevi suffulta. *Pedicelli* ad 3 mm. longi, puberuli, parcius lepidoti. *Calycis* fere ad imam basem divisi segmenta inter se inaequalia, suboblonga, apice rotundata, 3·5–5 mm. longa, 2·5 mm. lata, rubra, margine ciliolata lepidotaque, dorso medio parcius lepidota. *Corolla* purpureo-rosea; tubus 7 mm. longus, intra praesertim superne breviter pilosus; lobi 5, patentes, obovato-oblanceolati, obtusiusculi, 11 mm. longi, 7 mm. lati, margine undulati. *Filamenta* 13 mm. longa, inferne piloso-barbata, antheris anguste oblongis 2·5 mm. longis. *Ovarium* 2·5 mm. altum, minute puberulum, sparse lepidotum; stylus 17 mm. longus, inferne sulcatus, glaber. *Capsula* **calycem persistentem aequans.—W. G. Craib.**

The neat little Rhododendron which forms the subject of our illustration is a native of the moorland tracts and rocky slopes characteristic of the loftier passes leading across the Eastern Himalaya into Tibet, within a few miles of the summits of which it reaches its uppermost limit. Here the brilliant red-purple flowers render the species a charming object, and after hot sunshine the air is filled with the heavy aroma due to a copious resinous secretion which testifies to the comparatively dry climate it enjoys. In its late flowering, which takes place in June and July, and in its early fruiting, which occurs in October, *R. setosum* bears witness to the brief summer of the elevated regions it affects. The Bhoteas of Sikkim and of Tibet, who know the plant as "Tsallu," regard it and *R. anthopogon*, Wall., for which their name is "Palu," as largely con-

tributing by their strongly resinous scent to the headaches and the feeling of oppression which not infrequently attend the crossing of the lofty passes they inhabit, and there is no doubt that the aroma they emit is too heavy and powerful to be wholly agreeable. From its dwarf habit and its slow growth *R. setosum* is best adapted to places like the Rock-garden where it is relieved from competition with stronger-growing plants. It needs a damp peaty soil. It has never been common in cultivation in Great Britain, and appears here to be short-lived. At present it is quite rare in collections; the material for our figure was obtained from a specimen in the garden of Sir E. G. Loder, at Leonardslee, Horsham. Like many high Alpine species it would doubtless succeed better where there is a well-defined winter and a regular snowfall than it does under our indeterminate seasons and late spring frosts.

DESCRIPTION.—*Shrublet* about a foot in height; twigs beset with deciduous divaricate setae. *Leaves* elliptic-obovate or oblong, apex rounded or nearly truncate, the midrib excurrent and slightly apiculate, base wide cuneate, rounded or nearly truncate, $\frac{1}{3}$–$\frac{1}{2}$ in. long, $\frac{1}{6}$–$\frac{1}{3}$ in. wide, coriaceous, lateral nerves indistinct, midrib raised beneath, both surfaces rather sparingly lepidote, rather sparingly setose on the revolute margin, particularly towards the base; petiole very short. *Pedicels* $\frac{1}{8}$ in. long, puberulous and sparingly lepidote. *Calyx* divided almost to the base; segments somewhat unequal, more or less oblong, rounded at the tip, $\frac{1}{7}$–$\frac{1}{5}$ in. long, $\frac{1}{10}$ in. wide, red, their margin ciliolate and lepidote, the outer surface slightly lepidote about the middle. *Corolla* rose-purple; tube $\frac{1}{3}$ in. long, shortly pilose within, more particularly above; lobes 5, spreading, obovate-lanceolate, more or less obtuse, their margin undulate, nearly $\frac{1}{2}$ in. long, $\frac{1}{3}$ in. wide. *Filaments* over $\frac{1}{2}$ in. long, bearded below; anthers narrow-oblong, $\frac{1}{10}$ in. long. *Ovary* $\frac{1}{10}$ in. long, finely puberulous, sparingly lepidote; style $\frac{2}{3}$ in. long, channelled below, glabrous. *Capsule* as long as the persistent calyx.

Fig. 1, upper surface of a leaf; 2, under surface of the same; 3, calyx and pistil; 4 and 5, stamens; 6, ovary:—*all enlarged.*

M. S del. J.N Fitch lith

Ancer Ibbetson Day & Haghe imp

L Reeve & Co London

Tab. 8524.

SENECIO Kirkii.

New Zealand.

Compositae. Tribe Senecionideae.

Senecio, Linn.; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 446.

Senecio Kirkii, *Hook. f. ex T. Kirk, Students' Fl.* p. 344; *Cheeseman, Man. New Zeal. Fl.* p. 376; species foliorum forma capitulis magnis floribus radii albis valde distincta.

Frutex erectus, 2–4 m. altus, glaber; rami robusti. *Folia* valde heteromorpha, lineari-oblanceolata, oblanceolata vel obovata, apice obtusa, basi attenuata, 4–12 cm. longa, 1–3·5 cm. lata, supra medium parce repando-dentata vel saepissime integra, chartacea, nervis lateralibus utrinsecus 4–6 ascendentibus distinctis sed vix prominentibus; petiolus 0·5–2 cm. longus, gracilis. *Corymbi* magni, saepe ramosissimi, 10–30 cm. diametro vel nonnunquam latiores; bracteae inferiores foliaceae; pedunculi graciles, 2–5 cm. longi, superne 4–5-bracteati, bracteis recurvatis. *Capitula* numerosa, campanulata, 4–5 cm. diametro. *Involucri bracteae* subbiseriatae, oblongo-oblanceolatae, subacutae, circiter 1 cm. longae et 2·5 mm. latae, submembranaceae, apice breviter pubescentes. *Receptaculum* planum, alveolatum. *Flores radii* circiter 10, patuli, albi; tubus brevis; lamina oblanceolata, apice minute tridentata, 4-nervia. *Flores disci* flavi. *Achaenia* linearia, sulcata, glabra, circiter, 6 mm. longa. *Pappi setae* albae, 7 mm. longae, barbellatae.—*S. glastifolius*, Hook. f. Fl. New Zeal. vol. i. p. 147, t. 39; Handb. p. 161: non Linn. f. *Solidago arborescens*, A. Cunn. Prodr. n. 435: non Forst.—J. Hutchinson.

Among the numerous New Zealand species which have been the fruits of the journey of Capt. A. A. Dorrien-Smith to that Dominion one of the finest is the Senecio which forms the subject of our illustration. According to Mr. Cheeseman, *S. Kirkii* is common in the North Island of New Zealand, where it is endemic, from sea-level to an elevation of 2,500 feet from the North Cape to Wellington. The corymbs, according to Mr. Kirk, are sometimes highly compound and as much as three feet across. At times too the species is epiphytic on the distorted trunks of Rata and then may form a dome-shaped crown, twelve to twenty feet in diameter, with the foliage completely hidden by the snow-white flowers. Such specimens in the distance are remarkable and conspicuous objects. The shape of the leaves and the large corymbs of fine white flowers enable the species to be readily distinguished from the other

Senecios of New Zealand. The material for our plate has been supplied by Mr. T. A. Dorrien-Smith from his garden at Tresco Abbey, Isles of Scilly, where the plant thrives well in good soil. It has to be noted that while the bracts in the specimens sent for the purpose were oblanceolate and toothed, as shown in our figure, the corresponding bracts in the majority of the wild specimens in the herbarium at Kew are ligulate and entire.

DESCRIPTION.—*Shrub*, erect, 7–15 ft. high, occasionally higher; branches stout. *Leaves* very variable, linear-oblanceolate or obovate, apex obtuse, base narrowed, above the middle sparingly repand-toothed or more often entire, papery, $1\frac{1}{2}$–$4\frac{1}{2}$ in. long, $\frac{1}{3}$–$1\frac{1}{4}$ in. wide, lateral nerves on each side 4–6, ascending, distinct but hardly raised; petiole $\frac{1}{5}$–$\frac{3}{4}$ in. long, slender. *Corymbs* large, 4–12 in. across, or at times very large, 3 ft. wide, usually much branched; lower bracts leafy; peduncles slender, $\frac{3}{4}$–2 in. long, 4–5-bracteate above, the bracts recurved. *Heads* numerous, campanulate, $1\frac{1}{2}$–2 in. wide. *Involucral bracts* more or less 2-seriate, oblong-oblanceolate, rather acute, about $\frac{1}{3}$ in. long, $\frac{1}{10}$ in. wide, somewhat membranous, shortly pubescent at the tip. *Receptacle* flat, alveolate. *Ray-florets* about 10, white, spreading; tube short; lamina oblanceolate, 4-nerved, very shortly 3-toothed. *Disk-florets* yellow. *Achenes* linear, sulcate, glabrous, about $\frac{1}{4}$ in. long; pappus white, the setae barbellate, nearly $\frac{1}{3}$ in. long.

Fig. 1, floret of the ray; 2, floret of the disk; 3, a single seta of the pappus; 4 anthers; 5, style-arms:—*all enlarged*.

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M.S.del. J.N.Fitch lith.

Vincent Brooks Day & Son Lt.d imp.

L. Reeve & Co London.

Tab. 8525.

CORIARIA terminalis.

China, Tibet and Sikkim.

CORIARIACEAE.

CORIARIA, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 429.

Coriaria terminalis, *Hemsl. in Hook. Ic. Pl.* t. 2220; racemis elongatis terminalibus distincta.

Suffrutex perennis, 0·3–1 m. alta, pauciramosa. *Ramuli* arcuato-ascendentes, dorsiventraliter foliati, quadrangulares angulis angustissime alatis glanduloso-ciliolatis, plus minusve sanguinei. *Folia* opposita (torsione ramulorum disticha), late ovata, breviter acute cuspidata, basi subcordata; folia ramulorum pallide viridia marginibus nervisque sanguineis, 3·5–4·5 cm. longa, 2–3 cm. lata, basi 5-nervia, margine glanduloso-ciliolata, supra nervis venulisque impressis, subtus nervis prominentibus venulis prominulis; folia ramorum late elliptica, circiter 7 cm. longa, 5 cm. lata, 7–9-nervia; petioli 1–3 mm. longi. *Racemi* terminales, multiflori, 14–15 cm. longi, sub fructu ad 24 cm. longi; bracteae ascendentes, ovatae, acutae, 5–6 mm. longae, superne sanguineae; rhachis plus minusve sanguinea, breviter densiuscule glanduloso-pubescens; pedicelli pariter induti, 4–6 mm. longi, sub fructu 1–1·3 cm. longi, patentes. *Sepala* imbricata, late ovata, acuta vel apiculata, basi rotundata, 2·5–3 mm. longa, circiter 2·5 mm. lata, viridula, margine hyalina. *Petala* 0·8 mm. longa, carnosula, accrescentia, sectione transversa subtriangularia, extra convexa. *Stamina* 10, diplostemona; filamenta antheris breviora; antherae oblongae, 2·5 mm. longae, minute papillosae, rubrae, connectivo ultra loculos producto obtuso, loculis basi cuspidatis. *Carpella* 5, libera, alternipetala; ovarium angulo interiore ad torum productum affixum, lateraliter compressum, ultra 1 mm. longum; ovulum ab apice suturae ventralis pendulum; stylus cum stigmate alopecuriformis, 2·5 mm. longus. *Fructus* ex achaeniis quinque compositus, petalis accretis aurantiacis carnosis trigono-convexis 6–7 mm. longis 4·5–5 mm. latis 2·5–3 mm. crassis circumdatus; achaenia lateraliter compressa, oblonga (e latere visa), 2·75 mm. longa, 1·75 mm. a dorso ad ventrem, 1·2 mm. crassa, apice rotundata, basi subtruncata, dorsaliter valde carinata, utrinque costata costis 0·5 mm. a carina distantibus, stylis plus minusve persistentibus. *Pericarpium* crustaceum. *Testa* membranacea, brunneola.—T. A. Sprague.

The genus *Coriaria* to which the subject of our illustration belongs is so singular as to justify its being regarded as the type of a distinct natural family occupying a very isolated position. By Bentham and Hooker this family has been placed at the end of the Discifloral families with a note that it seems related to some of the Thalamifloral ones and has points in common with the *Phytolaccaceae* among the *Incompletae*. By Engler it has been included in the

Sapindales on account of the pendulous ovules with a dorsal (abaxial) raphe. The suggestion in Hooker's edition of Le Maout and Decaisne's "System," that the affinities of *Coriaria* are with the *Malpighiaceae* and other families of the *Geraniales* seems, however, preferable to either of the others. The fruit of *Coriaria* is peculiar in consisting of achenes attached by their inner angles to a slender prolongation of the torus and surrounded by a pulpy mass composed of the five much enlarged petals. *C. terminalis* may be distinguished from the other species of the genus by the terminal inflorescence, below which two axillary leafy shoots are commonly produced. These are dorsiventral, the decussate leaves being brought into a spuriously distichous position by the twisting of the consecutive internodes. An easily cultivated undershrub which grows well in any good loamy soil, *C. terminalis* is particularly to be recommended for gardens where the soil is calcareous. The only disadvantage to be contended with is the susceptibility of its flower to damage by spring frosts. In the garden of Canon Ellacombe at Bitton, whence came the material from which our figure has been prepared, this and other species thrive vigorously. The seeds of *C. terminalis* germinate readily; the plant can also be propagated by cuttings.

DESCRIPTION.—*Undershrub*, perennial, 1–4 ft. high, sparingly branched; twigs arcuately ascending, 4-angled, glandular-ciliate, reddish. *Leaves* opposite, spuriously distichous through the twisting of successive internodes, wide ovate, shortly acutely cuspidate, base subcordate; those of the young twigs pale green with reddish edges and veins, margin glandular-ciliate, base 5-nerved, $1\frac{1}{3}$–$1\frac{2}{3}$ in. long, $\frac{3}{4}$–$1\frac{1}{4}$ in. wide, nerves and veins impressed above, more or less raised beneath; those of the branches wide elliptic, about 3 in. long, 2 in. wide, base 7–9-nerved; petiole very short. *Racemes* terminal, many-flowered, $5\frac{1}{2}$–6 in. long, reddish upwards; rachis more or less reddish, shortly rather closely glandular-pubescent; pedicels glandular-pubescent, $\frac{1}{6}$–$\frac{1}{4}$ in. long; in fruit elongated and $\frac{1}{3}$–$\frac{1}{2}$ in. long, spreading. *Sepals* imbricate, wide ovate, acute or apiculate, base rounded, $\frac{1}{16}$–$\frac{1}{8}$ in. long, about $\frac{1}{10}$ in. wide, greenish with hyaline margin. *Petals* at first very small, fleshy, accrescent, almost triangular in section, convex without.

M.S. del. J.N. Fitch lith.

Vincent Brooks Day & Son Lt.d imp.

L. Reeve & Co. London

Tab. 8526.

STREPTOCARPUS ORIENTALIS.

Siam.

Gesneraceae. Tribe Cyrtandreae.

Streptocarpus, *Lindl.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 1023.

Streptocarpus orientalis, *Craib in Kew Bull.* 1911, p. 432; *W. Watson in Gard. Chron.* 1913, vol. liii. p. 214; a *S. Helsenbergii*, R. Br., caule haud glabrescente, foliis majoribus vix acutis, capsula graciliore recedit.

Herba; caulis solitarius, erectus, simplex, teres, 15–40 cm. altus, basi 7 mm. apice circiter 3 mm. diametro, inferne rubro-brunneus, maculis pallide viridibus elongatis parce instructus, pilis brevibus divaricatis glanduloso-capitatis densius tectus. *Folia* opposita, plerumque ovata vel elliptico-ovata, apice obtusa vel rotundata, basi interdum inaequalia, cuneata, 2·5–9 cm. longa, 2–7 cm. lata, membranacea, crenata vel crenato-serrata, pagina superiore omnino ut inferiore costa nervisque densius glanduloso-pilosa, nervis lateralibus utrinque 4–5 subtus prominulis; petioli foliorum inferiorum ad 5·5 cm. longi, intermediorum fere 3 cm. longi, superiorum circiter 3 mm. longi, supra canaliculati, indumento caulis. *Inflorescentia* axillaris, cymosa; pedunculus communis ad 9·5 cm. longus; pedicelli ad 4 cm. longi; bracteae ligulatae vel ligulato-spatulatae, 5 mm. longae, virides; nodo quoque flos terminalis, flos pro flore terminali, latere altero ramulus rudimentarius, haud evolutus, altero ramulus evolutus, formam iterans; flores penduli. *Calyx* vix ad basin divisus, 5 mm. longus, segmentis lanceolatis vel lineari-lanceolatis, extra ut pedicelli pilis albidis glanduloso-capitatis instructus. *Corolla* extra purpurea, intus pallidiora; tubus ad 2·7 cm. longus; limbus fere 2 cm. diametro lobis reflexo-patulis late oblongis apice rotundatis. *Filamenta* 8 mm. longa, glabra. *Ovarium* 1·6 cm. altum, cum stylo circiter 9 mm. longo glanduloso-pubescens. *Capsula* ad 5 cm. longa, 2 mm. diametro.—W. G. Craib.

The interesting Gesnerad which is here figured is a native of Siam, where it grows on rocks by streams on Mount Doi Sutep, near Chiengmai, at about 1,800 feet above the level of the sea. From this locality seeds were sent to Kew by Dr. A. F. G. Kerr in 1912; the plants raised from this consignment flowered in a tropical house in March, 1913, and provided the material from which our illustration has been prepared. The species had been already described by Mr. Craib from herbarium specimens communicated by Dr. Kerr from the same locality, and had by him been referred to the genus *Streptocarpus*, based by Lindley upon a South African plant; in spite of the remarkable extension of range of the genus which this decision implies, it seems clear that, if a conclusion can be based upon essential agreement as regards floral and fruit

November, 1913.

structure, the only alternative to the treatment here adopted must be the recognition of a new Asiatic genus repeating the reproductive organs of *Streptocarpus* and separated therefrom by a somewhat intangible difference in the morphology of the vegetative organs. Until the stem develops the leaves are clothed with silky grey hairs. The racemose cymes gradually elongate and ultimately attain a length of ten or twelve inches, so that a plant continues to bear flowers in succession for two or three months. Under the conditions suitable for the African species of the genus, *S. orientalis* thrives well and produces when in flower an elegant effect. It may be propagated by seed, which it ripens freely.

DESCRIPTION.—*Herb* with a solitary, erect, simple, terete stem 6–16 in. in height, $\frac{1}{3}$ in. thick below, $\frac{1}{8}$ in. thick near the top, near the base reddish-brown, but sparingly blotched with elongated pale green patches, rather densely beset with short spreading gland-tipped hairs. *Leaves* opposite, membranous, usually ovate or elliptic-ovate, tip rounded or obtuse, base at times unequal, cuneate, margin crenate or crenate-serrate, 1–$3\frac{1}{2}$ in. long, $\frac{3}{4}$–$2\frac{3}{4}$ in. wide, upper surface uniformly densely glandular-pilose, beneath similarly glandular-pilose on the midrib and 4–5 pairs of raised lateral nerves; petioles variable in length, of the lowest leaves over 2 in. long, of the central over 1 in. long, but of the uppermost only $\frac{1}{8}$ in. long, all channelled above and rather closely beset with short, spreading, gland-tipped hairs. *Inflorescence* axillary, cymose; primary peduncle nearly 4 in. long; pedicels about $1\frac{1}{2}$ in. long; bracts ligulate or spathulate-ligulate, $\frac{1}{5}$ in. long, green; individual defining flowers developed successively, their pedicels patulous and pendent. *Calyx* $\frac{1}{5}$ in. long, hardly divided to the base, lobes lanceolate or linear-lanceolate, beset outside like the pedicels with whitish gland-tipped hairs. *Corolla* purple outside, paler within; tube rather over 1 in. long; limb about $\frac{3}{4}$ in. wide, the lobes reflexed-spreading, wide oblong, rounded at the tip. *Filaments* $\frac{1}{3}$ in. long, glabrous. *Ovary* $\frac{2}{3}$ in. long; style about $\frac{1}{3}$ in. long; both glandular-pubescent. *Capsule* about 2 in. long, $\frac{1}{12}$ in. in diameter.

Fig. 1, vertical section of calyx and pistil; 2, corolla, laid open; 3, a stamen; 4, capsules; 5, seed;—*all enlarged except* 4, *which is of natural size.*

Stamens 10, 2-seriate, filaments shorter than the anthers; anthers oblong, $\frac{1}{10}$ in. long, finely papillose, red, connective obtuse, produced beyond the locules which are cuspidate at the base. *Carpels* 5, free, alternate with the petals; ovary attached by the inner angle to the produced torus, compressed laterally; ovule pendulous from the top of the ventral suture; style and stigma feathery, $\frac{1}{10}$ in. long. *Fruit* made up of 5 achenes, enclosed in the orange-yellow, fleshy, enlarged triangular-convex petals now $\frac{1}{4}$–$\frac{1}{3}$ in. long, $\frac{1}{6}$–$\frac{1}{5}$ in. wide, $\frac{1}{10}$–$\frac{1}{8}$ in. thick; achenes laterally compressed, oblong when seen sideways, $\frac{1}{8}$ in. long, $\frac{1}{14}$ in. from back to front, $\frac{1}{20}$ in. thick, rounded at the tip, somewhat truncate at the base, strongly keeled on the back and with a distinct rib on each side of the keel; styles more or less persistent. *Pericarp* crustaceous. *Testa* membranous, brownish.

Fig. 1, flower; 2, the same, two of the sepals removed; 3, anther; 4, carpels; 5, fruit with two of the accrescent petals removed; 6, an achene; 7, embryo:—*all enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks, Day & Son Ltd. imp.

Tab. 8527.

MORENIA CORALLINA.

Colombia.

PALMACEAE. Tribe ARECEAE.

MORENIA, *Ruiz et Pav., Prodr. Flor. Peruv. et Chil.* p. 150, t. 32; *Drude in Engler & Prantl, Natürl. Pflanzenfam.* vol. ii. pars iii. p. 63.

Morenia corallina, *Karst. in Linnaea*, vol. xxviii. (1856), p. 274, *et in Flor. Colomb.* vol. ii. p. 135, t. 171 (1862–69); species *M. Poeppigianae*, Mart., affinis, foliolis lanceolatis rectis, filamentisque aequilongis differt.

Palma inermis; caulis 4–6-metralis, annulatus, viridis. *Folia* pauca, 2-metrales; petiolus 4 dm. longus; foliola utrinsecus circiter 24, 6 dm. longa, 5–6 cm. lata, lanceolata, recta, apice inaequalia. *Inflorescentia* dioica; spathae 4, membranaceae, infima breviter tubulosa, ore oblique truncata, tres superiores fusiformes; flores in spadice leviter immersi, ebracteati, primum albi, demum citrini. ♂ *Calyx* minutus, 3-dentatus. *Petala* 3, calyce multo longiora, coriacea, valvata. *Stamina* 6, filamenta brevia, basi connata; antherae oblongae. *Ovarii rudimentum* columnare. ♀ *Calyx* tripartitus, lobi triangulares, valvati. *Corolla* calyce triplo longior, tubus brevis, lobi triangulares, acuti, valvati. *Ovarium* globosum, stigmata 3, patentia, subcarnosa. *Bacca* globosa, 18 mm. diametiens, nitido-coccinea; spadix fructigera flavescens. *Albumen* aequabile, corneum; embryo supra basin dorsalis.—C. H. WRIGHT.

The graceful Palm of which a figure is here given is a native of Colombia and is most nearly allied to *Morenia Poeppigiana*, Mart., a native of Peru, which differs in having broader sigmoid leaflets and alternately longer and shorter filaments. The genus *Morenia* includes some six species, all Andine. It is very closely related to the genus *Chamaedorea*, Willd., but is readily distinguished in having a three-toothed in place of an annular or patelliform calyx in the male flower. One of the species, *M. fragrans*, Ruiz & Pav., has already been figured at t. 5492 of this work; this species, owing to its specific name, has at times been confused with the very different *Chamaedorea fragrans*, Mart., a palm with bilobate leaves. Two other species of *Morenia*, *M. corallocarpa*, Hort., and *M. Lindeniana*, Wendl., have also been in cultivation; a sixth species, *M. integrifolia*, Trail, distinguished from the others by its simply forked leaves, is not yet known in collections. The Kew plant of *M. corallina*, which has been in cultivation for many years

and the origin of which is now unknown, thrives well in the Aroid house in a mixture of rich loamy soil and sand, and requires abundance of moisture both in the air and at the roots throughout the year. From this plant was obtained the material for our plate.

DESCRIPTION.—*Palm* with an erect, slender annulate green stem 12–20 ft. high. *Leaves* few, 6–7 ft. long, gracefully arched, pale green; petiole $1\frac{1}{4}$ ft. long; leaflets about 24 on each side of the rachis, 2 ft. long, 2–$2\frac{1}{4}$ in. wide, lanceolate, straight, unequally acuminate. *Inflorescence* dioecious; spathes 4, membranous, the lowest shortly tubular with an unequally truncate mouth, the three upper fusiform; flowers slightly sunk in the spadix, ebracteate, at first white, at length pale yellow. Male: *Calyx* minute, 3-toothed. *Petals* 3, much longer than the calyx, coriaceous, valvate. *Stamens* 6; filaments short, connate at the base; anthers oblong. *Rudimentary ovary* columnar. Female: *Calyx* 3-partite, lobes triangular, valvate. *Corolla* thrice as long as calyx, shortly tubular below; lobes triangular, valvate. *Ovary* globose; stigmas 3, somewhat fleshy, spreading. *Berry* globose, $\frac{2}{3}$ in. across, bright pink; spadix yellowish in ripe fruit. *Albumen* equable, horny; embryo dorsal, situated above the base.

Fig. 1, two flowers from female spadix; 2, a single female flower, the perianth in vertical section; 3, transverse section of ovary; 4, seed; 5, sketch of an entire plant:—*the three first enlarged, the fourth of natural size, the last much reduced.*

M.S. del. J.N. Fitch lith.

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Tab. 8528.

GENISTA hispanica.

Portugal and Spain to Liguria.

Leguminosae. Tribe Genisteae.

Genista, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 482.

Genista hispanica, *Linn. Sp. Plant.* p. 999; *Cav. Icon.* vol. iii. p. 6, t. 211; *Jacq. Icon.* t. 557; *Lodd. Bot. Cab.* t. 1738; *Gren. et Godr. Fl. France,* vol. i. p. 356: *Bicknell, Fl. Pl. Riviera,* t. xii. fig. B; *Rouy et Fouc. Fl. France,* vol. iv. p. 225; *Reichb. Icon.* t. mmlxxxv. fig. i. ii.; *Spach in Ann. Sc. Nat.* sér. iii. vol. ii. p. 271; *Aschers. et Graeb. Syn. Mitt. Eur. Fl.* vol. vi. pars ii. p. 245; a *G. gibraltarica,* DC., cui affinis, inflorescentia breviore densiore, carina dorso superne pubescente facile distinguenda.

Suffrutex erectus vel suberectus; ramuli steriles pinnato- vel decomposito-spinosi, plerumque penduli vel subpenduli, ad 6 cm. longi, virides, pilis longis hic illic instructi; ramuli floriferi tantum folia evoluta gerentes, vel e ramis infra ramulos steriles vel e ramulis sterilibus orti, ad 8 cm. longi, pilis longis albis adpressis instructi. *Folia* simplicia, anguste oblongo-lanceolata vel oblongo-oblanceolata, apice acuta vel subacuta, basi cuneata, ad 10 mm. longa et 3·75 mm. lata, pagina superiore glabra, inferiore margineque pilis longis albis plus minusve deciduis instructa, integra, nervis lateralibus subobscuris, vix petiolata. *Racemi* densi, subcapituliformes, circiter 2 cm. longi et diametro; bracteae parvae, ante anthesin decíduae; pedicelli 4 mm. longi. *Calyx* viridis, bilabiatus, extra, ut pedicelli, pedunculi ramulique floriferi pubescens; tubus 1·5 mm. longus; labium superum e lobis duobus deltoideis obtusiusculis tubo subaequilongis, inferum e lobis tribus lanceolatis obtusis mediano 2 mm. longo lateralibus paulo brevioribus constitutum. *Corolla* lutea; vexillum ovato-rotundatum, circiter 8 mm. diametro, glabrum, ungui fere 2·5 mm. longo; alae 8·5 mm. longae, 4 mm. latae, margine inferiore basin versus pilis paucis albis instructae, ungui vix 2 mm. longo; carina 8·5 mm. longa, circiter 3·5 mm. lata, dorso superne pilis paucis albis longis instructa, ungui 2·5 mm. longo. *Stamina* monadelpha. *Ovarium* 4 mm. altum, pilis longis albis tectum, pluriovulatum, stylo 5·5 mm. longo, stigmate parvo capitato. *Legumen* rhomboideo-oblongum, ad 9 mm. longum et 4 mm. latum, fusco-brunneum, primo pilis longis paucis instructum mox glabrum; semina subellipsoidea, brunnea, subnitida, 2 mm. longa.—*Spartium hispanicum,* Spreng. Syst. vol. iii. p. 177. *Cytisus hispanicus,* Vukot. in Rad. Jugos Akad. Zagreb. vol. xxxi. p. 100.—W. G. Craib.

The *Genista* here figured has long been a favourite garden shrub in southern England. Though named *G. hispanica,* it is not confined to the Iberian peninsula, but extends from Portugal to Liguria in North-Western Italy. Its nearest allies are *G. gibraltarica,* DC., and *G. decipiens,* Spach; from the former it is distinguished by the shorter and denser

inflorescence, from the latter by the subequal petals. *G. hispanica* thrives best in a moderate, rather than rich soil, and in a sunny position, and is an admirable plant for the Rock Garden, or a sunny terrace only suited for dwarf plants. Few shrubs, even in May, can produce a more brilliant display. In shady positions or too rich a soil, our plant makes soft, sappy growths which do not flower freely and are apt to be winter-killed. It is increased by August cuttings under a cloche, or by seeds. The material for our plate came from a plant cultivated out of doors at Kew.

DESCRIPTION.—*Undershrub*, erect or suberect; sterile twigs pinnately or decompoundly spinescent, often pendulous or nearly so, up to $2\frac{1}{2}$ in. long, green and beset here and there with long hairs; flowering twigs alone bearing fully developed leaves, springing either from the main stem below the sterile twigs or from the sterile twigs themselves, about 3 in. long, beset with long white adpressed hairs. *Leaves* simple, narrowly oblong-lanceolate or oblong-oblanceolate, acute or subacute, base cuneate, $\frac{2}{5}$ in. long, $\frac{1}{6}$ in. wide, glabrous above, below and on the margin beset with more or less deciduous long white hairs, entire, lateral nerves indistinct; petiole obsolete. *Racemes* dense, almost capitate, about $\frac{3}{4}$ in. long and wide; bracts small, early deciduous; pedicels $\frac{1}{6}$ in. long. *Calyx* green, 2-lipped, pubescent outside, as are the pedicels, peduncles and flowering twigs; tube under $\frac{1}{16}$ in. long; upper lip with two deltoid rather blunt teeth about as long as the tube; lower lip with three lanceolate teeth, the lateral rather shorter than the central. *Corolla* yellow; standard rounded-ovate, about $\frac{1}{3}$ in. wide, glabrous, claw $\frac{1}{10}$ in. long; wings over $\frac{1}{3}$ in. long, $\frac{1}{6}$ in. wide, the lower margin towards the base with a few white hairs, claw under $\frac{1}{12}$ in. long; keel over $\frac{1}{3}$ in. long, under $\frac{1}{6}$ in. wide, with a few white hairs on the back towards the tip. *Stamens* monadelphous. *Ovary* $\frac{1}{6}$ in. long, many-ovuled, clothed with long white hairs; style nearly $\frac{1}{4}$ in. long, stigma small, capitate. *Pod* rhomboid-oblong, over $\frac{1}{3}$ in. long, $\frac{1}{6}$ in. wide, dark brown, at first beset with a few long hairs but soon glabrous; seeds almost ellipsoid, brown, somewhat shining, $\frac{1}{12}$ in. long.

Fig. 1, a leaf; 2, a flower, the corolla removed; 3, standard; 4, wing-petal; 5, keel-petal; 6, pistil:—*all enlarged*.

M.S del. J.N.Fitch lith.

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Tab. 8529.

RHODODENDRON NIGROPUNCTATUM.

China.

Ericaceae. Tribe Rhodoreae.

Rhododendron, *Linn.*; *Benth. et Hook. f. Gen. Plant.* vol. ii. p. 599.

Rhododendron nigropunctatum, *Bur. et Franch. in Morot, Journ. de Bot.* vol. xxxiv. (1891), p. 95; *Hemsl. in Kew Bull.* 1910, p. 118; affinis *R. intricato*, Franch., sed corymbis 1–2-floris, calycis lobis longioribus, antheris et stylis longe exsertis differt.

Frutex parvus densissime ramosus; rami graciles, nigro-squamosi; ramuli juniores foliati, breves, squamis aureis instructis. *Folia* persistentia, elliptica vel obovata, apice obtusa vel rotundata, basi subcuneata, cum petiolo 0·5–1 cm. longa, 3–6 mm. lata, crassa, utrinque densissime lepidota. *Perulae* ciliatae, exteriores suborbiculares, interiores oblanceolatae, extra superne lepidotae. *Corymbi* terminales, 1–2-flori. *Flores* subsessiles, pallide purpurei, 2 cm. diametro. *Calycis* lobi oblongi, apice rotundati, ad 2 mm. longi, superne parce ciliati, extra lepidoti. *Corollae* tubus brevis, intus superne villosus; lobi subaequales, ovati, apice rotundati, patentes, glabri. *Stamina* 9–11; filamenta basin versus albo-villosa; antherae longe exsertae, fulvae, vix 2 mm. longae. *Ovarium* dense lepidotum; stylus filamentis aequilongus, glaber, stigmate incrassato.—J. Hutchinson.

The almost pygmy Rhododendron here figured is one that occurs on grass lands on the mountains of Szechuan in Western China at elevations of from 10,000 to 15,000 ft., where it was collected by Mr. E. H. Wilson on behalf of Messrs. J. Veitch & Sons. It had, however, already been met with by French travellers and was first described from their specimens. The plant from which our figure was made was obtained from Messrs. Veitch in 1910, and although then eight years old was still only some ten inches in height. It is very closely allied to another Chinese species, *R. intricatum*, Franch., of which a figure has been given at t. 8163 of this work. There are, however, several differences which serve to separate the two species, and of these the more obvious are the longer calyx-lobes and the further exserted anthers and stigma of *R. nigropunctatum*. Being one of the dwarfest and neatest of Rhododendrons, *R. nigropunctatum* is a charming plant for a moist nook in the Rock Garden. It requires a peaty sandy soil, and can be propagated by means of cuttings placed in gentle heat in August.

December, 1913.

Description.—*Shrub*, very dwarf, 8–10 in. high, with a neat rounded crown; branches slender, and with black scales; younger twigs leafy, short, with golden scales. *Leaves* persistent, elliptic or obovate, obtuse or rounded, base somewhat cuneate, including the petal $\frac{1}{5}$–$\frac{2}{5}$ in. long, $\frac{1}{8}$–$\frac{1}{4}$ in. wide, thick, densely covered with scales on both surfaces. *Bud-scales* ciliate, the outer suborbicular, the inner oblanceolate, scaly outside on the upper portion. *Corymbs* terminal, 1–2-flowered. *Flowers* subsessile, $\frac{3}{4}$ in. across. *Calyx* covered with scales outside; lobes oblong with rounded tips, very short, sparingly ciliate upwards. *Corolla* pale purple; tube short, sparingly hairy upwards on the inner side; lobes subequal, ovate, rounded at the tip, spreading, glabrous. *Stamens* 9–11; filaments white-pubescent near the base; anthers far exserted, tawny, barely 1 lin. long. *Ovary* densely clothed with scales; style about as long as the filaments, glabrous; stigma thickened.

Fig. 1, a leaf; 2, leaf-scales; 3, calyx and pistil; 4, longitudinal section of calyx and ovary; 5, corolla, laid open; 6 and 7, stamens:—*all enlarged.*

M.S.del.J.N.Fitch.lith.

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Tab. 8530.

DERRIS oligosperma.

New Guinea to New South Wales.

Leguminosae. Tribe Dalbergieae.

Derris, *Lour.*; *Benth. et Hook. f. Gen. Plant.* vol. i. p. 549.

Derris (§ Brachypterum) oligosperma, *K. Schum. et Lauterb. Fl. Deutsch. Südsee,* p. 361; ab affini *D. scandente,* Benth., alis basi truncatis glabris recedit.

Liana lignosa, ultra 15-metralis, basi vix 4 cm. diametro (ex *Sprague*); ramuli teretes, juventute ferrugineo-pubescentes. *Folia* 14–17·5 cm. longa, petiolo 3·5–4 cm. longo ramulis rhachidibus petiolulisque pubescente suffulta; stipulae parvae, densiuscule ferrugineo-pubescentes; rhachis superne praecipue canaliculata; foliola 5–6-juga, elliptico-ovata ad oblongo-obovata vel terminalia elliptico-obovata, apice parum retusa, mucronulata, basi inferiora oblique subtruncata, superiora cuneata vel late cuneata, 3–6·3 cm. longa, 1·9–4 cm. lata, chartacea, supra costa nervisque exceptis glabrescentia, minute reticulata, infra pallidiora, costa nervisque densius ceterum sparse pubescentia, nervis lateralibus utrinsecus 5–7 supra conspicuis subtus prominulis; petioluli 2–3 mm. longi. *Racemi* axillares, circiter 12 cm. longi, pedunculo vix 2·5 cm. longo suffulti, nodis conspicuis flores 4–6 vel usque ad 9 gerentibus; pedicelli ad 7 mm. longi, apicem versus bracteolis duabus vix 1·5 mm. longis instructi. *Calyx* 3·5 mm. longus, truncatus, obsolete 3-dentatus, margine involuto, extra ferrugineo-pubescens, intus glaber. *Vexillum* subrotundatum, 8·5 mm. longum, margine involuto, ungui 2 mm. longo suffultum; alae oblongae, basi truncatae, 7·5 mm. longae, 2·5 mm. latae, ungui 2·5 mm. longo, glabrae, carinae medio leviter adhaerentes; carina 7 mm. longa, 3·5 mm. lata, obtusa, superne pilis paucis breviusculis ferrugineis instructa, ungui 2·75 mm. longo. *Discus* 8-lobatus. *Ovarium* compressum, 7 mm. altum, adpresse pubescens, stylo glabro, stigmate parvo capitato. *Fructus* ad 4·5 cm. longus et 1 cm. latus, latere altero anguste alatus, adpresso ferrugineo-pubescens.—*D. scandens,* auct. plurim. austral. vix *Dalbergia scandens,* Roxb. *D. involuta,* Sprague in Gard. Chron. 1905, vol. xxxviii. p. 3. *Wistaria involuta,* Sprague in Gard. Chron. 1904, vol. xxxvi. p. 141.—W. G. Craib.

The subject of our illustration is a powerful woody evergreen climber which has been in cultivation in the Temperate House at Kew for over a quarter of a century, and has now attained large dimensions. The seed from which it was raised came from the Richmond River in New South Wales, and when for the first time it flowered in 1904 it was, from its flowers alone, described as a new *Wistaria.* When fruits became available it was found to be a member of the *Brachypterum* section of *Derris*, and to

belong to the species which has been accepted by most authors dealing with the vegetation of Australia as *D. scandens*. But while this is the case it is certainly quite different from the true *D. scandens* of India and Indo-China, and in Australia, where it is met with as a littoral species from Clarence River in New South Wales to the extreme north of Queensland and is known as the Climbing Derris or the Fish-poison Pod, it is the representative of *D. scandens*. This south-eastern representative of *D. scandens* is not, however, confined to Australia; it extends beyond the Torres Straits northwards to New Guinea, and it was upon New Guinea specimens that its claim to specific rank was first established. The material for our plate has been obtained from the Kew plant which has in most years since 1904 produced a few inflorescences. This shyness in flowering, probably due to an insufficiency of strong sunshine, militates against the horticultural value of the species in this country, though doubtless under tropical conditions it would prove a rival to its near ally, *D. scandens*, which when loaded with its racemes of rather smaller white flower is a remarkably striking object. *D. oligosperma*, like *D. scandens*, is a species very easily grown, being the reverse of fastidious as regards soil, and being readily propagated from cuttings of the ripened wood when seed is not available.

DESCRIPTION.—*Shrub*; stems woody, climbing, over 50 ft. long, at the base under 2 in. thick; twigs terete, at first rusty-pubescent. *Leaves* 5½–6 in. long; petiole 1½ in. long, pubescent like the twigs, rachis, and petiolules; stipules small, closely rusty-pubescent; rachis canaliculate, particularly towards the distal end; leaflets 5–6-paired, elliptic-ovate or oblong-obovate or the terminal elliptic-obovate, somewhat retuse at the tip, mucronulate, the lower ones obliquely subtruncate, the upper ones cuneate or wide-cuneate, 1¼–2½ in. long, ¾–1½ in. wide, chartaceous, glabrous above except on the midrib and nerves, finely reticulate, paler beneath, and there densely hairy on the nerves sparsely so between; lateral nerves 5–7 on each side, visible above, raised beneath, petiolules $\frac{1}{12}$–$\frac{1}{8}$ in. long. *Racemes* axillary, about 5 in. long, peduncle in flower hardly 1 in. long, longer in fruit, nodes prominent, each

usually 4–6-, occasionally 9-flowered; pedicels over $\frac{1}{4}$ in. long, with towards the tips two small bracteoles. *Calyx* $\frac{1}{6}$ in. long, truncate, obscurely 3-toothed, margin involute, rusty-pubescent externally, glabrous within. *Standard* nearly orbicular, $\frac{1}{3}$ in. long, margin involute, claw $\frac{1}{12}$ in. long. *Wing-petals* oblong, truncate at the base, and under $\frac{1}{3}$ in. long, $\frac{1}{10}$ in. wide, claw $\frac{1}{10}$ in. long, quite glabrous, externally slightly adherent to the keel-petals. *Keel* over $\frac{1}{4}$ in. long, $\frac{1}{7}$ in. wide, obtuse with a few short rusty hairs towards the apex, claw $\frac{1}{10}$ in. long. *Disk* 8-lobed. *Ovary* compressed, over $\frac{1}{4}$ in. long, adpressed-pubescent; style glabrous; stigma small, capitate. *Pod* about $1\frac{3}{4}$ in. long, $\frac{1}{3}$ in. wide, narrowly winged along one side, adpressed rusty-pubescent.

Fig. 1, a bud; 2, a flower, the corolla removed; 3, standard; 4, a wing-petal; 5, keel-petals; 6, pistil; 7, fruit:—*all enlarged except* 7, *which is of natural size.*

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M.S. del. J.N. Fitch lith

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Tab. 8531.

CIRRHOPETALUM Mastersianum.

Malaya.

Orchidaceae. Tribe Epidendreae.

Cirrhopetalum, *Lindl.*; *Benth. et Hook. f. Gen. Plant.* vol. iii. p. 504.

Cirrhopetalum Mastersianum, *Rolfe in Lindenia,* vol. vi. p. 33, t. 255; *Cogn. & Gooss. Dict. Ic. Orch. Cirrhopet.* t. 3; species distincta a *C. gamosepalo,* Griff., scapis longioribus, floribus majoribus, petalis et sepalo postico minutissime ciliatis differt.

Herba epiphytica; pseudobulbi ovoidei, obscure angulati, monophylli, 2·5–3·5 cm. longi, basi vaginis ovatis membranaceis obtecti. *Folia* oblonga, subobtusa, basi subattenuata, coriacea, 10–12 cm. longa, 2–3 cm. lata. *Scapi* floriferi ad basin pseudobulborum producti, graciles, suberecti vel arcuati, 12–15 cm. longi; umbellae 6–8-florae; bracteae lineari-lanceolatae, acutae, 6–7 mm. longae. *Flores* mediocres, lutei, brunneo-suffusi. *Sepala*: posticum elliptico-ovatum, subacutum, valde concavum, circiter 6 mm. longum, margine breviter ciliato; lateralia fere ad apicem connata, lineari-oblonga, emarginata, 3–3·5 cm. longa, 1–1·2 cm. lata, basi subattenuata. *Petala* falcato-oblonga, acuta, trinervia, 6 mm. longa, margine minute ciliata. *Labellum* recurvum, carnosum, lineari-oblongum, 3–4 mm. longum, margine integrum. *Columna* crassa, 2 mm. longa; dentes triangulares, acuti, 0·5 mm. longi.—R. A. Rolfe.

The attractive Orchid here figured was first introduced from the Netherlands East Indies by Messrs. Linden of Brussels, with whom it flowered in June, 1890, when it was described and figured in Lindenia; it was named in compliment to the late Dr. Masters, then editor of the Gardeners' Chronicle. The exact habitat of *C. Mastersianum* has not been recorded. It is very distinct from the majority of the cultivated species of *Cirrhopetalum*, and while it is in some respects comparable with *C. gamosepalum*, Griff., it is quite different in colour, and has the ciliae of the petals and of the dorsal sepal very minute. The plant from which our illustration has been prepared is one which was received at Kew from the Royal Botanic Garden, Glasnevin, in 1903. *C. Mastersianum* is a species which is very easily grown; it thrives well in a mixture of equal parts of peat, osmunda fibre and sphagnum, in a basket suspended in a shady position near the glass of a moist tropical house. It is peculiar among its congeners in requiring no period of rest, and it possesses the unusual habit of flowering at intervals throughout the year without deteriorating in vigour.

December, 1913.

DESCRIPTION.—*Herb*, epiphytic; pseudobulbs ovoid, faintly angled, 1-leafed, 1–1$\frac{1}{3}$ in. long, clothed at the base with ovate, membranous sheaths. *Leaves* oblong, subobtuse, rather narrowed to the base, leathery, 4–5 in. long, about 1 in. wide. *Scapes* slender, from the bases of the pseudobulbs, suberect or curved, 5–6 in. long; umbels 6–8-flowered; bracts linear-lanceolate, acute, about $\frac{1}{4}$ in. long. *Flowers* medium-sized, yellow flushed with umber brown. *Sepals*: posterior elliptic-ovate, subacute, very concave, about $\frac{1}{4}$ in. long, with shortly ciliate margin; lateral connate almost to the apex, linear-oblong, emarginate, 1$\frac{1}{4}$–1$\frac{1}{3}$ in. long, about $\frac{1}{2}$ in. wide, somewhat narrowed to the base. *Petals* falcate-oblong, acute, 3-nerved, $\frac{1}{4}$ in. long, margin finely ciliate. *Lip* recurved, fleshy, linear-oblong, 1$\frac{1}{4}$–1$\frac{1}{2}$ in. long, margin entire. *Column* stout, $\frac{1}{12}$ in. long; teeth triangular, acute, very short.

Fig. 1, portion of a flower, lateral sepals partly removed; 2, a petal; 3, column and lip; 4, anther-cap; 5, pollinia:—*all enlarged.*

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